First Copy

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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Library DETROIT

80,000 Motor Vehicles To Be Tested in Chicago Safety Lanes Next Week

Dealer Association to Supply Man Power, With Courtesy the Keynote; No Adjustments To Be Made During Test

CHICAGO, July 16.—When Chicago next week launches what is destined to be probably the most comprehensive and ambitious safety lane campaign ever staged by any large city, with facilities for testing 80,000 vehicles, the Chicago Automobile Trade Association members, both distributors and dealers, will play the most important role of any of the 150 participating organizations in the drive.

A. C. Faeh, general manager of the association, today made known that members of this body will supply the man power for checking the thousands of cars, trucks and buses that pass through the seven safety lanes to be established at the most heavily traveled points through the city.

In a bulletin sent out by the association to distributors and dealers, it is stated that, although the campaign is scheduled to last from July 20 to 25, it will be continued a second and possibly a third week if results warrant.

Each lane, it is explained, will have an operating crew of fourteen workers, supervised by experienced lane men.

Discussing the type of man power required, the bulletin stresses the fact that "men who have been engaged in meeting the public are best qualified. As no adjustments are made in the lane, the purely mechanic type is not the best qualified, unless he has had experience in meeting the public."

The order of stops along each lane, it is announced, will be as follows: 1. registration of car to be tested. 2. headlights, stop lights, tail light and parking lights. 3. horn,

(Continued on Page 2)

MASS. TRUCK CLUB FILES COMPLAINT AGAINST RAILROADS

Boston, Mass., July 16.—Charging that the Boston & Maine and New York, New Haven & Hartford railroads, under the guise of their subsidiaries, are engaging in motor truck transportation in Massachusetts on a basis that amounts to unfair competition, the Motor Truck Club of Massachusetts, Inc., has filed a complaint with the State Department of Public Utilities.

The club asks for hearing, investigation and an order compelling reasonable fares and charges "which will be compensatory for the services randered" for truck transportation.

The action created wide interest, being considered the first step in a general movement to bring stricter regulation of the rapidly expanding business of motor transportation and the adjustment of numerous difficulties that have arisen as a result of the rapid development.

The Boston & Maine Transporta-

(Continued on Page 5)

Indianapolis June Car Sales Show Gain Over Year Ago

INDIANAPOLIS, Ind., July 16.—June registrations for Indianapolis, showing a slight but significant gain over June of 1930 brought the first half year to a close with totals 22 per cent. below those of the same period of last year. The June figure, however, showed the average seasonal decline from the previous month.

While numerous strong spots appeared in the list, strength displayed by Chrysler and General Motors groups was particularly outstanding. Among these at least three lines and possibly four were in splendid position to exceed the entire number of registrations for last year by the end of the current month. Included in this group is Chevrolet, whose six months' total was only about 25 cars below the whole of 1930; Pontiac with only about 35 cars to register this month to attain last year's total; De Soto with about 25 cars needed and more than that number already registered in July, and Plymouth which will probably pick up the sixty cars necessary to reach the 1930 total if factory deliveries permit sufficient retail operation.

In the General Motors group the record made by Chevrolet during the first half is unusually impressive. A gain of more than 50 per cent. over the same period of 1930 was registered and, although there was noticeable slowing up of sales in this class as the hot summer months and vacation season set in, Chevrolet gave every indication of being set for a strong fall business, with dealers anticipating a much better second half than last year.

Buick, which has consistently registered gains over each month of 1930 throughout the first half, finished with a comfortable margin over that period of last year, while the Cadillac-LaSalle combination was practically even, Cadillac registering considerable increase and LaSalle slumping somewhat.

Oakland, likewise, fell slightly be-

(Continued on Page 12)

Car Makers Believe Conditions May Force Car Price Increase

Generally Agree That Present Levels, Even With Low Material Costs, Fail to Provide Adequate Returns

NEW YORK, July 16.—Believing that present prices of motor vehicles, certainly the lowest dollar value the industry ever has been able to offer, may very likely be subject to revision upward in the not distant future, Automotive Daily News has asked a number of leaders in the automotive field to give us their opinions of probable trends in this respect. It is interesting to note that a majority of the executives believe that prices are so low that developing conditions may easily force an advance. All of them appear to believe that prices now are too low for the best interests of the industry.

One of the leaders in the industry believes discussions of price movements at this time had best be avoided, because of their unsettling effect on business generally. Another prominent executive, who did not care to be quoted, expressed the

(Continued on Page 2)

LIBBEY-OWENS-FORD DIRECTORS APPROVE BUYING 2 PLANTS

Toledo, O., July 16.—Directors of the Libbey-Owens-Ford Glass Company at their meeting here formally approved and ratified contracts in the acquisition of two glass plants of the National Plate Glass Company at Ottawa, subsidiaries of the General Motors Corporation.

The directors also approved final details for the issuance of $9,000,000 of 5 per cent. convertible gold notes to finance this purchase from General Motors.

The purchase of these two plants from General Motors was made in connection with a $50,000,000 contract received by Libbey-Owens-Ford to furnish virtually the entire glass requirements of General Motors and subsidiaries during the next seven years.

N. A. C. C. DIRECTORS DISCUSS CONDITIONS IN FOREGN MARTS

Detroit, July 16.—Motor transport development and automobile trade conditions in Europe and the Near East occupied the attention of the directors of the National Automobile Chamber of Commerce at their monthly meeting held here at the Country Club yesterday. Outside of this, only routine matters were on the docket.

The directors listened to John V. Lawrence, the N. A. C. C.'s European representative, back from two and a half years on the other side. Mr. Lawrence reported that despite the unsettled conditions sales in Europe have held up remarkably well in the first half of the year. While there has been some letdown in passenger cars, this has been offset by increased business in commercial vehicles.

The increased use of motor vehicles, particularly buses and trucks,

(Continued on Page 2)

TODAY

Sparks From Detroit.....Page 2
Legal Pitfalls for Dealers Discussed by Maryland A. T. A.....Page 3
New Highway Legislation by States for 1931.....Page 3
Editorial: "Another Barometer" Page 4
Differential Discussion.....Page 4
Calendar of Coming Events..Page 4
Insuring Wholesalers Profits With Trucks.....Page 5
Engineering News.....Pages 6, 7
REFERENCE TABLES
Cumulative June New Commercial Car Registrations.....Page 5
Cumulative June New Passenger Car Registrations.....Pages 6, 7
Major Specifications and Mechanical Details of Commercial Cars Pages 8, 9, 10

ORR REPORTS WILLYS PACIFIC COAST SALES AHEAD OF LAST YEAR

Los Angeles, Cal., July 16.—Basing his opinion on official registration figures for the state of California, G. V. Orr, vice-president of the Willys-Overland Pacific Company, local assembly plant for Willys and

(Continued on Page 2)

DIAMOND T SALES IN JUNE 25% OVER JUNE LAST YEAR

Chicago, July 16.—A 25 per cent. increase in truck sales for June over the same month a year ago was today reported by E. J. Bush, vice-president of the Diamond T Motor Car Company in charge of sales. Mr. Bush added that June was the first month this year to show a gain for the company over the corresponding month of 1930, and he

(Continued on Page 5)

GRAHAM ANNOUNCES PERSONNEL CHANGES AND APPOINTMENTS

Detroit, July 16.—W. L. Kessinger, service manager of the Graham-Paige Motors Corporation since 1927, has been appointed purchasing agent, as assistant to Thomas Bradley, director of purchases, to fill the vacancy caused by the death of J. M. Kinzie.

William V. DeGalan, who has been manager of the merchandising division of the service department, has been advanced to the position of service manager.

Kessinger has been associated with the three Graham brothers since August, 1918, when he joined their truck company at Evansville, Ind., as service manager.

DeGalan entered the service de-

(Continued on Page 12)

Late News Flashes

New York, July 16.—A Dow, Jones dispatch from Detroit this morning asserts that the Ford Motor Company has been conducting some severe tests of the new Plymouth car, particularly to the performance and durability of the floating power feature. The dispatch further asserts that some well-informed people believe Ford may adopt the floating power suspension for the Model A if the tests convince the engineers that it is a desirable feature.

* * *

Cleveland, O., July 16.—The Eaton Axle and Spring Company and subsidiaries report for the six months ended June 30, 1931, a net profit of $564,171 after charges, depreciation, Federal taxes, equal to 81 cents a share on the common stock.

* * *

Trenton, N. J., July 16.—Sales of the Thermoid Company and wholly owned subsidiaries for the quarter ended June 30, 1931, showed an increase of 65 per cent. over the first quarter, according to R. J. Stokes, president of the organization.

Dealers Problems More Than Just Used Cars—Page 4

Leaders Believe Conditions May Force Higher Prices

(Continued from Page 1)

opinion that "it is entirely possible, if materials costs begin to rise, manufacturers may be compelled to revise their prices upward."

Opinions expressed by automotive leaders follow:—

PRESENT LEVELS GIVE INADEQUATE RETURN

By ALVAN MACAULEY
President Packard Motor Car Company

I am not sure I can make a clear-cut answer, because, in my opinion, while it is true with returning prosperity the price of materials can be expected to, and should, increase, that increase will more than likely be offset by the cost of production due to increased production programs.

It is my belief that if times do not improve and thereby better quantity production, it will be necessary to increase the price of cars now manufactured. Few manufacturers are making an adequate return at present levels.

PRICES WILL REMAIN LOWER THAN THEY SHOULD BE

By C. W. NASH
President Nash Motors

My own opinion on this subject is that the price of passenger cars has worked itself down to a point where automobiles are being sold on altogether too close a margin of profit compared with the low production and cost of materials and labor.

The automobile industry, so far as I am advised, or as it applies at least to our business, has not seen any reduction in wages. While raw materials are at a low price at the present moment, I believe indications point to a higher price for raw materials.

While I do not believe there will be any marked movement to increase prices, it is a fact that there should be, but competition is so keen and every one is attempting to get a piece of what little business there is that I think prices are bound to remain lower than they really should.

WOULD LIKE TO SEE HIGHER PRICES

By L. A. MILLER
President Willys-Overland

Acknowledging your letter of July 10, I do consider it likely that the present price levels may be increased. So long as commodity prices are as low as they are today, there will probably be no big movement in that direction. Personally, I should like to see higher price levels as that would bring about an improved situation so far as the parts manufacturers are concerned and would enable automobile manufacturers to go further in their efforts to strengthen their dealer organization.

DOES NOT BELIEVE PRICES WILL INCREASE

By I. J. REUTER
President Oakland Motor Car Co.

I hesitated about writing you in answer to your inquiry regarding price trends in the passenger car field because I particularly detest prophesying for the future. It is so easy to be wrong. Certainly the general trend of prices, in view of the economic situation, should not be up. Furthermore, although material prices may show some increases, we certainly strive to counteract this by improvements in design and manufacture. So my personal opinion is that prices in the passenger car field will not show an upward trend.

THE AUTOMOBILE HAS REACHED ITS LOW POINT IN PRICE

By A. L. WARMINGTON
Controller DeVaux Hall Motors

Regarding the present low price of the automobile to the public, I am sure Mr. De Vaux would say that it is very definitely indicated that the automobile has reached its low point in price and the future will see a gradual increase of f. o. b. prices on all types of automobiles.

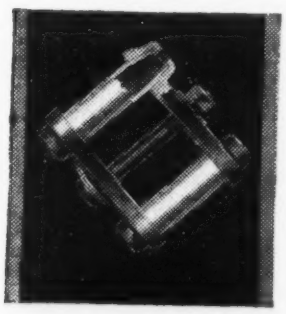
Coming to Grand Rapids from California as we did, unhandicapped by any past commitments in either material or overhead, we have been able to purchase our requirements of quality units at an exceptionally favorable scale of prices, with the results that we have been able to present to the public an increase of automobile value for the money that we have ever been able to present, irrespective of the fact that the dealers' and distribtuors' discounts have been increased.

We find, however, a small but steady increase in our purchasing prices and a tendency for the public to ask for de luxe models that can only culminate a gradual increase in f. o. b. prices.

WISCONSIN MACHINERY CO. PLANS ST. LOUIS BRANCH

Milwaukee, Wis., July 16.—O. W. Brown, vice-president of the Wisconsin Machinery and Manufacturing Company, announces that in order to serve the many jobbers handling Wisconsin pistons in the St. Louis teriritory a complete branch service will be established at 2832-34 Washington Boulevard.

IMPROVED
Tryon
SPRING SHACKLES



Important new features embodied in Improved Tryon Spring Shackles result in greater inbuilt strength, greater accuracy, increased bearing surfaces, improved lubrication, easier riding and longer life.

Manufacturers: See mechanical specification tables in this issue for Tryon equipped cars. Write for information and quotations.

Sole Licensee:
WILLYS-MORROW CO., INC.
ELMIRA, NEW YORK

ORR REPORTS WILLYS PACIFIC COAST SALES AHEAD OF LAST YEAR

(Coninued from Page 1)

Willys-Knight motor cars and trucks, is more than optimistic as to the outlook for the company's late summer and fall business in the Pacific Coast states.

Month by month since early spring Willys-Overland's Pacific Coast business has been showing excellent gains, both in comparison with the previous month and over the same month of last year, said Mr. Orr. "This increase has been gaining momentum, for while our May volume this year was better by 18 per cent. than the same month of last year, we wound up June with an increase of 92 per cent. over June of 1930.

"It is not just that our shipments are on the increase, but the factor which is the most gratifying is that official registration figures indicate that Willys cars are moving out of the stocks of our dealers into the hands of buyers. Official figures for California show that in face of a falling away of a little over 23 per cent. in registrations for the entire industry for the first half of this year, as compared with last year, Willys-Overland shows a gain of 62.9 per cent. In June, with the industry as a whole slumping 19.6 per cent., we show a gain of 156.1 per cent.

"As a result of this steady improvement in our business we have also been improving our relative position among the various manufacturers. For example, June saw our registrations gaining third position for us in two of southern California's most important cities, namely, San Diego and Los Angeles. Our relatively better position is not restricted, however, to California, for last month also saw our registrations in Washington on the upgrade, with the city of Spokane finding us in third place."

The improvement of Willys-Overland's west coast business is partly accountable also, according to Mr. Orr, to the number of excellent dealer accounts which have been signed up during the last sixty days.

N. A. C. C. DIRECTORS DISCUSS CONDITIONS IN FOREGN MARTS

(Coninued from Page 1)

is noted in all these countries, especially the Near East, where the population is largely dependent on the automobile as the chief means of transportation. With the return of more settled conditions, this growth should increase. In the past there has been a great deal of opposition to the motor vehicle on the ground it is a luxury or that it competes unfairly with other means of transportation, Lawrence said.

Through a campaign for educating the public, carried on by both the National Automobile Chamber of Commerce and the International Bureau of Automobile Manufacturers, of which the N. A. C. C. is a member, the public is attaining a better understanding of the economics of motor transport and the trend toward higher taxation and excessive restrictions is gradually changing for the better.

80,000 Motor Vehicles To Be Tested in Chicago

(Continued from Page 1)

windshield wiper and rear view mirror. 4. steering wheel for play and ease of operation. 5. wheel alignment. 6. brake pedal, service brakes and hand brakes.

"The success of the safety lane is dependent upon the type of men," concludes the bulletin of instructions. "Courtesy is important and every effort should be made to make the test pleasant and educational for the car owner, for he has voluntarily submitted his car to this test. No coercion may be used to have a motorist subject his car to the test."

Plans as perfected will provide facilities for testing more than 80,000 vehicles. The campaign is being sponsored by the city council committee on traffic and safety, of which Alderman John A. Massen is chairman, and the Chicago Safety Council.

SPARKS *from* DETROIT

Red Ink Market Faces Depression

* * *

Henry H. Hower

* * *

Cost of Not Selling

Chris Sinsabaugh—Detroit Editor

MAYBE G. V. Orr, vice-president of the Willys-Overland Pacific Coast, had kissed the Blarney Stone when he wrote: "Your most interesting column is continually preaching the better business gospel. We, on the Pacific Coast, are trying to do likewise in our own way," and then he incloses a broadside, printed in red ink, showing the business he is rounding up in his territory. For instance, in the way of evidence, June, 1931, over May, 1931, 6 per cent.; May, 1931, over May, 1930, 18 per cent.; May, 1931, over April, 1931, 31 per cent.; June, 1931, over April, 1931, 34 per cent.; June, 1931, over June, 1930, 92 per cent. "This, of course, represents our dealers' increased business, because nobody buys cars these days for the pure joy of warehousing them," he adds.

And he P. S.'s: "The reason for the color you see in this letter is because we are all going to need less red ink the balance of the year than originally estimated."

Somebody's selling cars, evidently.

* * *

NOW Henry H. Hower, erstwhile advertising manager of Stearns-Knight, and for several years past president of the Enterprise Oil Company of Buffalo, founded forty-three years ago by his uncle, Frank B. Hower, is in the limelight through Enterprise being taken into the merger which brings nineteen of the big oil companies under the banner of the Quaker State Oil Refining Company of Oil City, Pa.

Uncle Frank was a powerful figure in the early days of the American Automobile Association, when he was chairman of the runs and tours committee which put on the famous Glidden tours. When Uncle Frank stepped down, his nephew succeeded him as president of Enterprise, whose oil always has been used by Pierce-Arrow. Nephew Henry has diversified and has built up a strong following in the marine field with his Duplex marine engine oil, but he has kept in touch with the automobile industry with his greases, Enterprise being the third oldest in the country in that field.

While Enterprise will continue as a leader in the marine field, under the new set-up the automobile industry will not be overlooked. In all likelihood, this end of the business will be pushed. With grease as the foundation and with the prestige of being the oil vender for Pierce-Arrow, Enterprise, one of the important members of the new group, intends to make a serious bid for automobile business.

* * *

JUST quoting some of the epigrammatic utterances of Harry Moock, sales manager of Plymouth, who addressed the Maryland State Automobile Dealers Association at Ocean City, Md., the other day on "Automobile Retailing—What's It All About?" which has reached us here in Detroit:

"Most people have quit using horses and buggies, yet they still want to ride sitting down and they have to use automobiles. There are more than 45,000,000 American girls and boys under 24 who are live prospects for automobiles. The potential market is greater in 1931 than it ever was, because increased production and modern engineering and manufacturing facilities have brought the automobile within reach of every citizen of the country.

"There are only two kinds of retailers in any line of business—those who know how and those who do not. Those who know will continue in business and be successful; those who do not will fade out. It is not the high cost of selling, but the high cost of not selling, that is important, and that should not concern the retailer."

* * *

LOOKING over the miniature models of the Napoleonic coach models built by the contestants in the Fisher Body Craftsmans Guild which are now jamming the ninth floor of the General Motors Building, preparatory to the final national awards, I did not appreciate the time the boys have put in building these tiny replicas until I read a letter just received by H. J. C. Henderson, Fisher Body sales manager and secretary of the guild. That letter was from a youngster who was unable to finish his coach at the time the entries closed. The boy stated that he had put in something like 1,000 hours on the job, but that he was not disappointed—he is going to keep on and make a bid for honors in the 1932 contest.

LEGAL PITFALLS DISCUSSED BY MARYLAND A. T. A.'S COUNSEL IN CONVENTION

E. ALLEN SAUERWEIN, counsel for the Automobile Trade Association of Maryland, at the convention held in Ocean City, Md., Monday, delivered an address on "Legal Pitfalls for the Automobile Dealer," in part as follows:

"When you have sold an automobile, any one of a number of situations may develop which may deprive you of the fruits of your sale, and it is my hope that any discussion of the various matters may give you a general knowledge of your rights and responsibilities which will help you avoid such losses. At the outset, however, let me tell you that when an unusual or difficult situation arises, consult you personal counsel at once. Many times a delay in consulting counsel may greatly impair your chances of a successful handling of the matter.

"When the automobile has been demonstrated to the prospective customer and the salesman has told and retold of its various superior qualities, and when the allowance on the used car has been agreed upon and the transaction is ready to be closed, the first step in closing the sale is the signing of the order. It is usually the first written evidence of the sale and is therefore of prime importance and to much emphasis cannot be placed upon its proper wording.

Order Forms

"When the automoblie industry was in its infancy, automobiles were rarely if ever sold by the dealers on credit. The order forms then in use in simple terms provided that the purchaser buy and the dealer sell a particular type and make of automobile at a specified price. They recited the amount of the cash deposit and provided that the balance of the purchase price be paid upon delivery. After a while occasional time sales crept into the marketing of motor vehicles, and in more recent times such sales have become the rule and not the exception. The usual method of effecting such sale is by conditional contract wherein the title is reserved in the seller until the automobile is fully paid for. While the order forms above referred to were appropriate to the transactions in the early stages of the marketing of motor vehicles, they were inappropriate and inadequate to transactions involving conditional sales. Some of the dealers in recognition of this fact modified and changed their order forms in an effort to meet the change in business conditions, but such changes were not uniform and did not reflect a comprehensive study of the matter, and at the present time a variety of forms is in use.

"While this evolution in business methods was taking place, the law was also changing, and some of the provisions now found in some of the order forms decrease rather than increase the rights the dealer would have had in the absence of such provisions.

"One of the order blanks, after providing for a cash deposit and an allowance on a traded-in automobile, provides for the payment of the balance in monthly installments, but contains no provision that the balance is to be secured by a conditional contract of sale, chattel mortgage, or otherwise, and contains a provision to the effect that the order contains all the terms of the transaction, and that there are no collateral agreements or understandings. Under the Uniform Sales act such a contract, in our opinion, is tantamount to an extension of credit whereby the vendor's lien for the unpaid balance is waived, and if the purchaser under such an order declined to execute a conditional contract of sale, the dealer would find it difficult if not impossible to compel him to do so, notwithstanding it was the intent of the parties that the deferred payments be so secured.

"The provisions of some order forms relative to the rights and remedies of the contracting parties in the event the purchaser declines to accept delivery in accordance with the contract are in many instances unwise and unfair. Some of the contracts do not treat a traded in automobile as part of the deposit, and contain express provisions with reference to the disposition of the

(Continued on Page 12)

Merchandising Used Trucks

For BETTER BUYS See
Our Open Air Display
of
BETTER USED TRUCKS
Stock changing almost daily. Several good used 1/2, 3/4 and 1 Ton Jobs will be for sale in a few days. These are being taken in on our new light delivery units of which we are selling PLENTY.
"Terms and Trades"
GENERAL MOTORS TRUCK CO.
35 Memorial Ave. W. Springfield
TEL. 4-5607

THE GENERAL MOTORS TRUCK COMPANY of West Springfield, Mass., is merchandising its used trucks on an open-air lot, and is attracting considerable attention with its idea, unique in that section as far as trucks are concerned. Above is a reproduction of one of its display ads

GALVESTON FORD DEALERS TO STAGE BEAUTY PAGEANT

Galveston, Tex., July 16.—Plans have been completed by the Ford dealers of Texas for a "Ford Frolic" to be held in this city July 18 and 19. The frolic will rival the International Pageant of Pulchritude which has made this city famous for a number of years, with first prize of a Ford sedan being awarded to the most beautiful young lady.

The entrants will be required to wear cotton pajamas and will ride on a bale of cotton, carried on a Ford truck. Entries will be made by Ford dealers from all parts of the state, and in addition to the sedan, other Ford cars will be awarded as prizes in addition to approximately $2,000 in merchandise awards.

The frolic is being held in the interest of Texas cotton, and curves and dimples which heretofore have decided the awarding of the prizes will be abandoned in favor of the most attractive pajamas. The trucks will be decorated in cotton. An old time fiddlers' contest will be held in connection with the event.

N. Y. CAR MERCHANTS GOLF MEET JULY 22

New York, July 16.—The fourth one-day golf tournament of the Automobile Merchants Association of New York, Inc., will be held at the Fennimore Country Club, White Plains, on Wednesday, July 22.

At the height of the golfing season the committee with C. H. Larson chairman, Fred J. Ryan vice-chairman, C. H. Jennings and A. G. Southworth are looking forward to a record attendance.

A special prize for the low net of the day, together with a choice selection of foursome prizes, will be awarded to the winners after dinner in the evening at the club house.

New Highway Legislation By States for 1931

WITH most of the state legislatures adjourned, a great deal of new highway legislation has been placed on the books, some of which is of very great interest to automotive manufacturers and dealers. American Highways, the quarterly published by the American Association of State Highway Officials, has made a compilation of the new legislation in this field, which we are presenting for the benefit of our automotive audience.

Complete reports are not yet in hand for Alabama, Florida, Illinois, Pennsylvania, Tennessee and Texas, but it may be noted here that the lower house in Florida has killed the atrocious bill passed by the Senate for an 8 cents per gallon gas tax.

ALABAMA

At the time of going to press the state legislature of Alabama is still in session. Legislation passed so far during the session provides for the discontinuance of a highway commission of three members and the appointment by the governor of a director of highways to take over their duties.

A law providing for the state highway department to rent convicts for road construction purposes was passed. The state of Alabama has just completed construction of fifteen state-owned toll bridges, which means that privately owned toll bridge construction in that state has doubtless been eliminated.

A proposition is before the legislature for a bond issue to be submitted to the people.

ARIZONA

The state legislature of Arizona, in order to provide funds to meet the emergency act of Congress, raised the gasoline tax from 4 to 5 cents per gallon, distributing three-tenths to the county highway fund and seven-tenths to the state fund. The tax levy was also increased to assist in this operation.

The state of Arizona joined with the state of California in the purchase of the only toll bridge in the state. This is located at Ehrenberg. The state highway mileage was increased 157 miles.

ARKANSAS

The general assembly of Arkansas passed several measures affecting the state highway department.

The general method of financing was not changed, but an increase of one half cent per gallon of gasoline was authorized, and this tax was given to the county in which it originated for use on county roads. In addition, $1,800,000 is turned back to the counties for county roads, and this amount is divided on a basis of population, area, assessed valuation and road mileage.

Bond issues amounting to $30,000,000 were authorized, and this amount will be spent mainly on surfacing trunk line highways. Previous to this time Arkansas has had a parity plan in which the less wealthy counties were the recipients of the major benefits.

CALIFORNIA

The California Legislature in carrying out the policy of getting control of toll bridges by legislative enactment joined with Arizona in the purchase of a privately owned toll bridge at Ehrenberg.

Eight hundred miles of additional roads were added to the state system. This mileage was based upon a study made by the state highway department.

Additions to the secondary system are also to be made during the next two years to total between 10 and 12 per cent. of the existing state highway mileage.

CONNECTICUT

The Connecticut Legislature had not adjourned at the time of going to press. It is highly probable that the revenues for road work will be increased by approximately 10 per cent.

Connecticut having no county officials, all of the road work is under the jurisdiction of the state highway commissioner. There are no toll bridges in Connecticut and all state bridges, which include nine draw bridges, are under the jurisdiction of the commissioner.

DELAWARE

The speed limit in Delaware has been increased from 35 to 45 miles per hour. Chauffeurs' and operators' licenses were reduced from $3 to $1.50. Truck weights were increased, 4-wheel vehicles 26,000 pounds, 6-wheel vehicles 38,000 pounds, trucks and semi-trailers 40,000. Axle loads were increased from 16,000 to 18,000.

A bill to license and govern advertising signs was defeated.

GEORGIA

While this is not the year for the state Legislature of Georgia to be in regular session, there was an extra session called in January. As far as the Highway Department work was concerned, however, there were virtually no laws of major importance passed.

IDAHO

The state Legislature of Idaho passed a resolution instructing the Department of Public Works to cooperate with the Bureau of Public Roads in making an economic and traffic survey of all roads in the state. From this survey it is determined to establish a long-time building program of main trunk and market roads.

Provision was made for licensing trailers

INDIANA

Under the new legislation in Indiana, changes were made in the truck law regulating dimensions and weight of vehicles. After January 1, 1932, the maximum width shall not exceed 8 feet, height 12 feet, length of single vehicle 33 feet and combinations 40 feet. The load law was reduced to 16,000 pounds with pneumatic tires and 80 per cent. of 16,000 pounds with solid tires. This same law limits the concentrated load under a formula subject to axle load, gives 24,000 pounds plus 600 pounds additional for each foot of distance between axle centers. Lugs or cleats are prohibited.

IOWA

In Iowa the speed limit on buses was increased by the Legislature to 45 miles per hour. The speed limit for trucks with pneumatic tires was increased to 35 miles per hour.

A chauffeur's license was approved by the Legislature.

The present motor bus and truck laws were amended, fixing the maximum length of 30 feet for freight-hauling vehicles and 33 feet for passenger-carrying vehicles, and any combination is limited to 45 feet.

A law was passed permitting the construction by the state of bridges, viaducts, railroad crossing eliminations in cities over 2,500 population where the houses average less than 200 feet apart.

The Highway Commission is authorized to vacate railroad crossings or portions of highways if said road is to be abandoned as a state road, and in the judgment of the commission it is not necessary for either a county or township road.

KANSAS

Under the legislation passed recently by Kansas the tax refund on gasoline not used for highway purposes was changed so that the purchaser makes an affidavit at the time of the purchase and is not charged for tax, instead of getting a refund.

Previous legislation provided for a reduction of the gasoline tax from 3 to 2 cents after July 1,1931, but the Legislature continued the 3 cents tax.

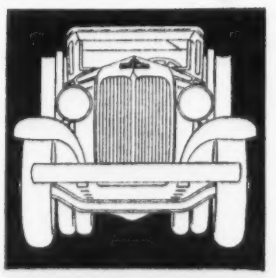
An additional fee or tax is now required by carriers of property or passengers. After providing for the administration of this act the remainder will go to the state highway fund. Kansas began building roads under the benefit district plan, assessing a certain amount of money

Continued on Page 11)

Looking for a Supplementary Line?

One small Reo dealer, who had taken only 15 trucks so far this year, sold 21 new 1½-Ton Speed Wagons the week they were announced.

This is typical. These remarkable new vehicles, for $625, are *selling*. And Reo has a new Special Truck Franchise, with regular dealer discounts, through which others may share in this volume. Mail coupon for full details.



$625

REO MOTOR CAR COMPANY
LANSING—TORONTO

Four-cylinder $625, Six-cylinder $725
Chassis f. o. b. Lansing, Michigan
Dual Wheels Extra

REO MOTOR CAR CO., Lansing, Michigan ADN7/14

Please send me at once—either by letter or through your representative—details of the Reo Special Truck Franchise.

Name _____

Address _____ _____
(City) (State)

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

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FRIDAY, JULY 17, 1931

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Harry A. Tarantous, Business Manager. 350 Hudson St., New York, N. Y.
George M. Slocum, Manager Detroit Bureau, 427-8 Fisher Building, Detroit, Mich., phone Empire 3500; Willard R. Cotton, Western Manager, 333 North Michigan Ave., Chicago, Ill., phone Central 5936; Metz B. Hayes, New England Manager, Little Building, Boston, Mass.; Blanchard Nichols & Coleman, American National Bank Building, San Francisco, Cal.; Lincoln Building, Los Angeles, Cal.; 1037 Henry Building, Seattle, Wash. Address ALL advertising and business correspondence to 350 Hudson St., New York City.

EDITORIAL DEPARTMENT

350 Hudson St., New York, N. Y. Telephone CA nal 6-1000
Alexander Johnston, Editor. William C. Callahan, News Editor.
Statistical Department (registrations and specifications), P. J. Robas, statistician; C. J. Alexander, sales analyst. Engineering Department, A. Benson Carleton, technical editor; J. Russell Walsh, engineering editor. Merchandising Department, Charles S. Zack, editor Art Department, John Bauersfeld, director.
Detroit Bureau, Chris Sinsabaugh, editor, 427-8 Fisher Building, Detroit, Mich. Telephone Empire 3500. Contributing editor, John C. Wetmore.

Another Barometer

IT was a very constructive move that General Motors made when it recently began announcing early in the month, its retail and wholesale business statistics for the preceding month. The figures hereafter will appear on the eighth of the month and will no doubt be considered one of the valuable trade barometers.

For years the United states Steel Corporation has beeen giving out the statistical abstract of its business, including the backlog or record of orders on hand and this has gained acceptance as a trade barometer.

With these two giant corporations giving the public this information month by month even the man in the street will be able to get a line on the general trends of business in two of the most important industrial fields.

General Motors is to be congratulated on its constructive move.

Growing Markets

ONE of the factors making for better markets is the normal growth in population. This is a factor that usually escapes notice, because it is so lacking in spectacular features. We do not stop to think that every year in this country we have somewhere between 1,000,000 and 1,500,000 of our youth attaining their legal majorities and coming into the market as individual buying entities.

There seems to be some feeling among statisticians that the rate of increase in our population is slowing down. It used to be accepted that our population increased at the rate of 15,000,000 every ten years, exclusive of immigration. That is, the normal birth rate added that number of citizens every ten years.

Even if that former rate slows down to 10,000,000 in ten years, these new adults add an enormous buying power to our country's total. The boy or girl reaching the age of twenty-one will normally reach a position where he or she begins to buy for himself or herself, instead of continuing as a mere unit in a family group

In considering the long-pull potentialities of our domestic market, we must not leave out of the picture this important factor of normal population increase. If it amounts to ten per cent. of our present market, that is about the proportion of our trade that export business represented in our palmiest period. If we had that extra ten per cent. now, there would be little talk about depression.

Labor Stabilization

NEW ENGLAND manufacturers have been asked by the industrial committee of the New England Council to report to it any methods which have been used successfully to promote regularization of employment.

That stabilization of employment is one of the problems facing American industry, no one now doubts. That the way to achieve it is through co-operation in such organizations as the New England Council is scarcely debatable. Management must solve this question, not government, and the great danger existing in the situation is that congressional action may be forced before industry can grip the problem. Such organizations as the New England Council are well advised in giving employment stabilization their earnest attention.

"It seems to me as if the tide had definitely turned. The crop situation is not so bad as formerly and it appears that considerably more goods will be hauled this year than last," says William F. Woodin, chairman of the board of the American Car and Foundry Company, speaking not only of the railway situation but of general business conditions as well.

Differential Discussions

IN this column Automotive Daily News is glad to present the opinions of its readers on topics related directly to the automotive industry. Automotive Daily News, however, must disclaim responsibility for such opinions. All questions regarding merchandising, technical problems or other information pertaining to automotive industry will be answered without charge in this column.

Dealers' Problems Go Deeper Than Used Cars, Says Reader

AUTOMOTIVE DAILY NEWS: Some weeks ago in your newspaper there appeared a letter from a dealer somewhere in Illinois in which he suggested that the automobile manufacturers should take over used cars, or, at least, should forbid their dealers to handle them. That has always seemed to me the only cure for the present situation. As far as I am concerned, I am not badly off. I showed a profit last year and I am going to show one this year, but not much of a one, considering how much time and effort I have put in on my business since January 1.

However, I wonder if you will grant a dealer a little space in your valuable paper to say something about the automobile business as a whole and not so much about used cars. We all of us who are dealers trace everything back to the used car as the beginning of all evil, but is it?

It seems to me that the automobile business has got a lot of things wrong with it, and not just the used car alone.

For instance, what other business in the world could get a poor sap to put $15,000 or $20,000 into a showroom, service station and what not and then give him a contract that gives him absolutely no protection whatever. Understand, I personally haven't got any kick on my factory. I have handled the one line for ten years and they have treated me okay, but any day during that time that some squirt of a road man got sore at me I could have been canceled out on sixty days' notice. However, any time they had done that thing I could have tied up with another company so fast it would have made their heads swim.

Also, what other industry can put goods on a freight car at their home town and collect against the shipment before the dealer has even had a chance to see the goods? Why should a dealer have to take on all the stuff the factory wants to ship him, pay cash down, and then carry the goods until he can sell them, with interest, piling up and other charges to boot?

They talk about the automobile industry being paternalistic (one of your readers did, just the other day in your paper), but if the industry wants to be paternal, why don't they give us the usual time to pay for shipments, to turn the goods into cash and not have to run to the banks for money to carry our shipments?

Last year and this year the company that builds my car has certainly been decent. They haven't forced a car on me that I didn't want, and I guess most manufacturers today are the same way. But I believe, nevertheless, that the manufacturers have got, sooner or later, to get further into this retail end of their business. They have got to do something strong in this used car problem; they have got to give the dealer the same time to pay that retailers in other lines get; they have got to give a contract that provides some sort of protection for a man who wants to invest enough cash in his business to bring in returns; they have got to give a man decent protection for the territory he is supposed to serve.

A DEALER WHO WONDERS.

Sumner Points to Value Of Junking Old Cars

Automotive Daily News: While dealers in general approve the junker plan as outlined in your columns recently, there are those who do not think it sound or practical.

Of course, there are different viewpoints, depending on who is doing the viewing. Those who condemn the plan do so, invariably, for one reason. They say it places a fictitious value on a worthless article. It may be that these critics are taking blue book values too seriously as a basis of trade-in allowance values.

Admitting that the "book" is not far off as to actual wholesale values of used cars, I have learned it does not pay to show or quote book figures to a potential customer. The public is so motorwise today that flashing the book is the equivalent of waving a red flag at a bull, and does not serve in securing the customer's good will at the beginning of a sales talk.

Then again, sales executives rely too much on advertised low list price as a volume getter. Buyers today are not as much interested in either list or selling price of the new car as they are in the allowance on the old one.

No matter what the future brings in good times, we shall never be able to take old cars in for their actual worth, for two reasons. First, because of competitive conditions that exist all over the country, and, second, the thing that the junker plan will overcome, the buyer's high valuation of his old car.

Let us look back a few years and quote concrete examples and figures. During the year 1915 and 1916 there were four salesmen retailing cars out of the one and only sales room handling that make in a Middle Western city of over a half million population. One day a prospective buyer drove up with one of those cars that gamely strove to live up to the slogan, "No sand too deep—no hill too steep," and came in to look at our car.

Asking the salesman if he could trade his car in on a new one, he was told that we did not accept cars in trade. "What will I do with it?" he inquired. "Well, if I had it," answered the salesman, "I'd run it in the river." Believe it or not, he sold the man a new car, and made him wait three months for it.

Try that sort of sales persuasion today, where twenty dealers and more than 100 salesmen are now selling the same car, while the city has but tripled in population.

Only as far back as 1926, when trading was at its height, the boys were wont to answer a query as to how much for a decrepit old vehicle with a snappy come back like, "How much does it weigh?" or, "Run it on the scales." Now they smile hopefully at the owner of any old ark and say, "It's in pretty good shape," or, "You've taken good care of your car."

Yes, the boys have learned a lot and we should help them to make that sort of approach good, because, don't forget, the owner of that car still thinks it is worth a lot of money, and any remark that tends to criticize his judgment in first buying it sets up a lot of sales resistance. That is where this junker plan is going to prove its worth. It is going to eliminate a lot of resistance that must be overcome in some way if we, as dealers, are to handle all the old cars that are ready to retire from active service.

Just the other day a man drove up in front of my place of business in an old relic that had seen nearly all its best days. In fact, I would say that it was staggering on the verge of a knockout. I looked it over carefully and remarked, "It has given you a lot of service and the motor still sounds good." "Mister," he said, "it is like one of the family. Why, I took my wife to the hospital for her first baby in that car."

Of course I sold him a new car, but I had to go in up to my neck to do it, and, let me tell you, no sales talk nor wonderful demonstration would ever have taken that car away from him for what it was actually worth. Incidentally, like the "one-hoss shay," it went to pieces all at once, for the axle dropped out the next day and we piled it up in a corner until we could find a junk man who would cart it away.

No, this junker plan is not placing a fictitious value on the old car at all. It is just helping the dealer approach somewhere near what the owner of that car really believes it is worth, and providing an outlet for the same article when it has changed hands; an outlet that will not make it a menace to traffic on the already overcrowded roads of America.

W. S. SUMNER.
Birmingham, Mich.

COMING EVENTS

SEPTEMBER

1- 3—**Cleveland, O.** Hotel Statler, Society of Automotive Engineers, twentieth annual aeronautical meeting in conjunction with National Air races.
8-17—**Utrecht, Holland.** Utrecht Fair, bus and truck show.
16-17—**Atlantic City, N. J.** National Petroleum Association, annual meeting, Hotel Traymore.
20-26—**Springfield, Mass.** Eastern States Exposition.
21-25—**Boston, Mass.** American Welding Society, meeting.
28-29—**Atlantic City, N. J.** National Association of Motor Bus Operators, fifth annual meeting, Hotel Ambassador.
26-Oct. 2—**Atlantic City, N. J.** American Electric Railway Association, annual meeting.

OCTOBER

1-11—**Paris, France.** International Automobile Salon.
2- 3—**Houston, Tex.** American Institute of Mining and Metallurgical Engineers, petroleum division meeting.
12-16—**Chicago, Ill.** National Safety Council.
14-16—**Pittsburgh, Pa.** Society of Industrial Engineers, convention.
15-24—**London, England.** International Motor Exhibition, Olympia Hall.
22-28—**Prague, Czecho-Slovakia.** International Automobile Exposition.

STUTZ INAUGURATES DEMONSTRATION TOUR

Indianapolis, Ind., July 16.—The new Stutz DV-32, announced this month and powered by an engine with double overhead cam shafts and dual valves—32 in number, is being presented to the public and dealers in spectacular fashion.

Three squadrons of cars, or flying circuses as they are being called, took to the highways this week in various part of the country, to demonstrate the new Stutz dual-valved motor under driving conditions.

E. T. SATCHELL TO TALK TO CANADIAN GROUP

New York, July 16.—E. T. Satchell, president of the Motor and Equipment Association, will leave tomorrow for Ottawa, Ontario, to attend the meeting of the Canadian Motor and Equipment Association, at which he is scheduled to make one of the addresses.

From Ottawa he will proceed to Asheville, N. C., where he is on the program to address the Southern Automotive Jobbers Association, which meets July 20 to 22.

Insuring Wholesalers' Profits With Trucks

This report on economical truck operation in the wholesale field was prepared by the General Motors Truck Company, Pontiac, Mich., and is appearing in serial form in Automotive Daily News. Copies of this report in pamphlet form are now available at all General Motors Truck Company dealer and distributorships.

CAREFUL study of the records of scores of wholesalers shows clearly that the great majority of wholesalers carry too large a percentage of unprofitable accounts on their books. An analysis of why these accounts are unprofitable shows that a surprisingly large number of them could be easily changed into profitable accounts if the cost of delivering goods to them were reduced. For these unprofitable customers in many cases are simply isolated customers who demand extra truck mileage and extra truck time for delivering their orders.

Delivery to these isolated customers is costly for the same reason that underload deliveries are costly. Every mile or fraction of a mile covered in reaching the isolated customer is mileage devoted to delivery of a single order. And unless the isolated customer's order is large enough to cover the excessive cost of extra mileage and time, the delivery is bound to be unprofitable.

It is important, therefore, that the wholesaler study the location of customers in his trading area to determine which customers, because of their isolated location, are demanding deliveries at excessive cost. Those customers, in many wholesale establishments, constitute from 60 to 80 per cent. of all the unprofitable customers on the books.

Two Courses of Action Open

The wholesaler who has a number of these unprofitable accounts on his books has two possible courses of action open to him:

1. He can drop the unprofitable customer and seek a more profitable one to take his place.

2. He can set about systematically to build the unprofitable, isolated customer into a profitable one.

Few wholesalers like to drop customers with whom they have cordial business relations, even when they know those customers are not profitable. Nor is that step necessary in most cases. For unprofitable customers can usually be built into profitable ones by constructive sales effort along these lines:

Sales effort should be directed toward increasing the volume of all present accounts. The wholesaler's salesman should look upon his task primarily as one of showing his retailers how to become better merchandisers. That is the first and best way to increase the volume of the retailer's orders, and greater volume means deliveries will pay greater profits.

Routes should be planned to demand a minimum of time and mileage. Frequently the customer whose account is unprofitable is one whose deliveries have never been properly handled. Better planning to bring this customer into a regular route for scheduled delivery is sometimes the means of making such customers profitable.

New business efforts of salesmen should be directed toward getting new, profitable accounts along present routes. If new, profitable customers—located near to isolated, unprofitable customers—are added, time and mileage devoted solely to the isolated customer will be reduced.

(TO BE CONTINUED)

THE COST OF SERVING ISOLATED CUSTOMERS

Small deliveries to isolated customers must be watched. If the margin for delivery and profit is only 2 cents on the dollar, and delivery cost is 25 cents per mile, the wholesaler can only break even on the following deliveries:

$12.50	worth of goods on a	1	mile run
$18.75	worth of goods on a	1½	mile run
$25.00	worth of goods on a	2	mile run
$31.25	worth of goods on a	2½	mile run
$37.50	worth of goods on a	3	mile run
$50.00	worth of goods on a	4	mile run
$62.50	worth of goods on a	5	mile run
$125.00	worth of goods on a	10	mile run

MASS. TRUCK CLUB FILES COMPLAINT AGAINST RAILROADS

(Continued from Page 1)

tion Company is named as the subsidiary of the Boston & Maine Railroad, and the New England Transportation Company as the subsidiary of the New Haven.

The last legislature created a special commission to study the subject of motor truck transportation and regulation and its inquiry now is under way.

The Motor Truck Club is composed of independent individuals and concerns engaged in that form of transportation. Some of the affiliates have been in the business more than twenty-five years, starting with horse-drawn vehicles, but shifting to motors with the advance of transportation methods.

The club asserts that the transportation companies are controlled by the parent railroads, which make up the losses incurred through the low rates in effect. The club claims that while railroads express alarm at the truck competition, they are making an effort to gain a monopoly by doing the work less than cost through their subsidized companies.

Specifically, the complaint alleges that the defendents do not and have not for a long time filed schedules showing rates and charges for motor truck transportation, and all forms of contracts affecting such rates and charges. It claims that the rates and charges differ from those in the schedules in such cases where schedules have been filed.

The rates, regulations and practices of the defendants are called "unjust, unreasonable, unjustly discriminatory and unduly preferential," and insufficient to yield reasonable compensation for the services rendered. By reason of these facts it is contended the defendants have subjected the Motor Truck club members to unfair competition and have injured them in the conduct of their business.

DAY-ELDER ANNOUNCES COAL DELIVERY MODEL

Irvington, N. J., July 16.—The National Motors Manufacturing Company here, builders of Day-Elder motor trucks and buses, announces a new specially built coal delivery model known as the Day-Elder Champion.

The Champion has a special wheel base and a special tread. It will carry two tons of coal along the highway at speeds up to forty-five miles per hour with the ease and safety of a light delivery car. The Champion can be driven in or out of any kind of a driveway no matter how narrow or curved, the maker says.

It is equipped with pneumatic tires and dual rear wheels, in order not to cut up residential driveways. The Hi-lift body is a feature. The Champion body lifts more than a foot higher than similar bodies and is equipped with an automatic shut-off.

DIAMOND T SALES IN JUNE 25% OVER JUNE LAST YEAR

(Continued from Page 1)

interprets this record as marking the beginning of a further upturn in the company's business.

"We take our June gain to be a favorable sign, indicating an upward trend in business," stated Mr. Bush. "I believe that the last six months of this year should be at least 50 per cent. better than the first six months.

"The sale of our new one and one-half-ton model has shown a steady increase month after month, beginning in February. This model has met with a favorable initial reception on the part of truck buyers, and its reputation is steadily increasing.

"Our business shows about a 20 per cent. decrease for the first six months of this year, as compared to the first six months of 1930, but on the other hand we are approximately 25 per cent. ahead of the first six months of 1928, which many authorities are inclined to take as a normal year. Furthermore, it should be mentioned in this connection that we sold more trucks in the first six months of 1930 than during any six months' period in the history of this company."

Built just the way you would like to build them for your own use.

WISCONSIN AXLE CO.
Oshkosh Wisconsin

STATE HIGHWAY, COUNTY, CITY AND GOVERNMENT DEPARTMENTS are large users of

Brockway-Indiana Trucks

The reputation of Brockway-Indiana trucks for dependable performance, low cost per ton mile operation and long life, is borne out by the ever increasing number of users in public work. Many of these fleets have grown from one or more trucks to as high as two hundred trucks.

If interested in buying or selling motor trucks today it will pay you to investigate the BROCKWAY-INDIANA line.

BROCKWAY MOTOR TRUCK CORP.,
General Office
Cortland - - - - New York

Cumulative New Commercial Car Registration Statistics, June, 1931

Returns for today: Arkansas, Indiana and Minnesota.

In this table, 12 states and the District of Columbia.

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Federal	Ford	G. M. C.	International	La France-Republic	Mack	Reo	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Arkansas			33				27		4								1				65	Arkansas
Delaware	1		40				44		14		1	4						1			105	Delaware
Illinois	8	3	350	29	51	2	421	12	98		8	6	1	3	15			18		31	1056	Illinois
Indiana		6	175	2	24	2	183	21	47	2	7	4		4	8	1	1	10		10	507	Indiana
Maryland	14	6	162	8	20	2	190	11	50	1	7	15	2	1	9	1	9	1	1	13	523	Maryland
Minnesota			190	8	18	2	183	4	62	1		12			6		5	17		6	514	Minnesota
Montana			44		4		67	1	18			1						1		3	139	Montana
North Dakota			45		5		44	1	57		1	7			5	1		2		1	169	North Dak.
S. Carolina		1	104		9		86	2	4		2	1					2				211	S. Carolina
Utah			52		11		80	8	12		1	3			3		2	1		2	175	Utah
West Virginia		4	114	6	18		137	2	29	1	1	10	1		4		1	10		5	343	W. Virginia
Wisconsin			310	26	25	3	267	4	72		2	14	4	7	10	1	1	20		16	782	Wisconsin
Dist. of Col.	8		38	1	8		106	14	10		2	2	2				6	1		3	201	Dist. of Col.
Totals, 1931	31	20	1657	80	193	11	1835	80	477	5	32	79	10	15	60	4	28	82	1	90	4790	Totals
Ark., 1930			81		1		70		9								3				164	Ark., 1930
Delaware, '30		1	33		1		50	2	3		3	2		1						1	97	Delaware, '30
Illinois, 1930	1		442	58	45	4	590	28	110		9	18	2	1		6	8	5	2	56	1385	Illinois, 1930
Indiana, 1930		61	200	2	24	1	341	38	56			9		5	1	6	1	5		16	766	Indiana, '30
Maryland, '30	8	14	112	5	12	3	237	17	30	1	27	5		3	1	1	18	5		7	506	Md., 1930
Minn., 1930		3	238	23	22	2	376	7	59	1	2	7			1	3	2	13		12	781	Minn., 1930
Montana, '30			45		4		78	4	16			1			1	1	1			2	153	Mont., 1930
Nor. Dak., '30			58		7		85	3	32			3			1	2		1	1	3	196	N. D., 1930
S. Car., 1930			90		2		163	1	4		2	1								6	269	S. Car., 1930
Utah, 1930			72		10		136	5	9		2	2					1			8	245	Utah, 1930
W. Va., 1930		3	112	2	14		189	20	39			5		1		2	5	3		7	402	W. Va., 1930
Wisconsin, '30		6	405	10	31	5	462	23	82		5	19	3	5	1	3	6	8		20	1094	Wis., 1930
D. of Col., '30	5	1	23	3	9		91	7	1		3	1	3				1			5	153	D. of C., '30
Totals, 1930	14	89	1911	103	182	15	2868	155	460	2	53	73	8	15	6	24	46	40	3	142	6211	Totals

Production - - Engineering - - Factory -

The Exhaust Gas Problem

By A. H. VANCE
Engineer, Bensonville, Ill.

The following, in part, is the second and concluding installment of an article presented before the Chicago section, Society of Auotomotive Engineers.

The study of combustion was made by the use of two sets of glass gas containers, by means of which we could draw off gas samples from individual cylinders without the loss of too much time. These gas containers were simply 1½-inch lengths of glass tubing which had been drawn down to ¼-inch rubber tubing size on each end. They were mounted vertically in wooden carrying racks, which were provided with suitable carrying handles. The lower ends of the containers were connected to a manifold by means of short lengths of rubber tubing, which could be closed tightly by means of pinch clamps. The upper ends were also provided with short lengths of rubber tubing and clamps provided for them.

These containers were filled with a solution of 5 per cent. sodium chloride, which had been previously saturated with exhaust gas, in order to prevent the absorption of carbon dioxide from the samples, and thus destroying the accuracy of the results.

The solution in these containers was drawn out of the bottom into a graduate, while the exhaust gas was allowed to enter the container at the top. When the gas was transferred into the Orsat machine, the process was reversed, the sodium chloride solution being placed under a head and allowed to flow into the gas container at the bottom, thus pushing the exhaust out of the top of the container into the calibrated chamber of the Orsat.

This method of obtaining gas samples proved quite satisfactory, as we were able to get samples from all the cylinders before serious changes could occur in the engine, two minutes being amply sufficient for the purpose.

The analysis of the gas samples then proceeded in the usual manner, most of our work, however, being confined to carbon dioxide determinations. These carbon dioxide readings were recorded, on the regular test date sheet, and were later transferred to graphs for purposes of visual comparison of manifold and carburetor distribution. The interpretation of these graphs was not clear to us at first, but as we gained in experience we found it comparatively easy to place the trouble definitely in either the manifold or carburetor, as the case might be. The remedy for the trouble was not always so easy to find.

Actual distribution tests were made by selecting a carburetor and placing it on the engine, with its air horn toward the front. The engine was then run with the throttle wide open, until heat conditions reached their normal operating point for this speed and load. All carburetor adjustments were made for maximum power, and also all the economy that could be obtained with this setting. The gas samples were then taken without delay.

The carburetor was then taken off and turned with the air horn toward the rear of the engine. When the engine had again steadied down, another set of gas samples was taken. All of these things were done as quickly as possible so that there was a minimum of chance for changes to occur either in the engine itself or outside of the engine. By proceeding in this manner we were able to get accurate gas samples, and therefore accurate figures regarding the distribution at the time.

A chart was used for determining the mixture ratios directly from the carbon dioxide readings. It was also possible, by the use of this chart, to determine the amount of carbon monoxide contained in the exhaust, without the necessity of analyzing a particular sample. The CO readings gave very little idea of mixture quality, but if they were combined with the analysis of the free oxygen content in the exhaust this could be determined quite readily. The relation of the percentage of oxygen to the percentage of carbon monoxide was conclusive in this respect. If these percentages were high in the case of both gases, and the percentage of carbon dioxide was correspondingly low, then we knew that the mixture quality for a certain cylinder was bad.

We had to form some basis for this line of reasoning, as there is nearly always a smal lamount of oxygen in the exhaust at all times. This indicates, without question, that the mixture is never homogenous at any time. The fact that carbon monoxide is found at the same time further supports this conclusion.

If the combustion was complete, there would be 14.6 per cent. of carbon dioxide contained in the exhaust. There would be no carbon monoxide, but there might, or might not be, a small percentage of oxygen present. Complete, or nearly complete, combustion occurs quite frequently in individual cylinders, as was shown by these individual analyses. This fact does not seem to affect the power, but it does help out the economy considerably. This seems to indicate that rich mixtures are needed for power, only because distribution is usually so bad that, if we did not richen the mixture, some cylinders would become too lean to fire satisfactorily. Under wide open throttle conditions this leanness might not be noticeable by ear.

Taking a set of figures from an actual test run, they were somewhat as follows: No. 1 cylinder showed 14 per cent. carbon dioxide; No. 2, 13 per cent.; No. 3, 13 per cent; No. 4, 13 per cent.; No. 5, 10 per cent., and No. 6, 11 per cent. of carbon dioxide. Consulting our chart, we find that 14 per cent. represents very nearly complete combustion; 13 per cent. shows a mixture ratio of 14.3 to 1, 10 per cent., represents a mixture ratio of 11.5 to 1 and 11 per cent, carbon dioxide represents a mixture ratio of 12.3 to 1. We also find that 10 per cent. of carbon dioxide in the exhaust means that more than 6 per cent. of carbon monoxide is present. Therefore in this cylinder there is a loss of nearly 25 per cent. in economy.

This loss may be more clearly understood when it is known that the burning of carbon to carbon monoxide liberates only 4,430 B. T. U. per pound of carbon, while the complete combustion of a pound of carbon liberates 14,650 B. T. U. Thus, complete combustion liberates more than three times as much heat as partial combustion.

The analysis of the exhaust gases from one of the widely advertised engines in the country shows that the exhaust does not contain more than 10 per cent. of carbon dioxide under wide open throttle conditions at any time. Analysis of the carbon monoxide shows that there is from 6.4 per cent. to more than 7.6 per cent. of this gas contained in the exhaust. When we consider the fact that the presence of 6.5 per cent. of carbon monoxide means a loss of about 30 per cent. in fuel economy, we might well begin to wonder if we haven't overlooked some important detail in automobile engine construction; or carburetor construction, as the case may be.

Wholly consistent results cannot be expected with exhaust gas analysis. This is not due to errors in the method, as many seem to believe. Rather, it is due to change within the engine itself, heat having quite a definite effect on distribution. Even small changes in intake manifold temperatures may make decided differences in the burning of the fuel and also in the distribution. This may be illustrated by check runs which were made some hours apart on the same apparatus, without change, except the removal and replacing of the carburetor. The first three cylinders were almost exactly alike as far as carbon dioxide gas was concerned. The principle change occurred in the last three cylinders. These three cylinders averaged a gain of more than 2 per cent. of carbon dioxide in the second run, showing that the combustion was much better. As far as we were able to determine, this was due solely to better heat distribution through the mixture.

Admitting, as we usually do, that dynamometer testing does not even approximate road conditions for automobile engines, we might expect to find different conditions in engines which have gone into service. We will not be disappointed in this, as the carbon dioxide content of the exhaust gas from a number of cars ran about 9 per cent. The carbon dioxide content seldom was lower than 6 per cent., and in many cases reached more than 10 per cent. It has been know nto exceed 13 per cent. of the total.

But we may well forget the economy problem when we start to consider the question of what becomes of this deadly gas after it has been exhausted into the open air. It cannot combine with another atom of oxygen without the aid of heat, and this heat is not available in sufficient quantity at the right moment.

Therefore, we find that when a car is exhausting 6.5 per cent. of carbon monoxide more than sixty cubic feet of this gas per gallon is being turned loose with nothing in particular to do but look for that other atom of oxygen. This problem is the more serious because very few people understand thoroughly the actual effects of this gas when it is breathed in either large

(Continued on Page 7)

CADILLAC AND CORD WIN FIRST PRIZES IN FRENCH STYLE EVENT

By F. DE FRANCIA
Du Pont Style Service, Paris

The famous Parisian automobile event, known as the Concours d'Elegance Feminine en Automobile, in which prizes are given for the best looking car and also for the ensemble of the car and the lady driving it, attracted more attention than ever in the French Capital this year. This competition was originally arranged for cars owned and driven by ladies. It has become so popular, however, that it is probable that next year it will be divided into two sections, to be shown on separate days.

The affair has come to be one of the principal features of the Paris season and this year it was especially brilliant due to the large number of entries and the glorious weather. It was held June 26 and, as usual, in the Bois de Boulogne. It was presided over as usual by a distinguished jury, which included men and women prominent in the social and artistic life of Paris.

This competition has always been a matter of considerable interest to automobile manufacturers because the cars are privately owned, often custom built, and nearly always finished for the event in colors chosen by the owner. This gives an opportunity to judge public preference for colors.

Numbers of first prizes are given, and the American cars to win awards were a sixteen-cylinder Cadillac cabriolet with a custom-built body by Duvivier, finished in Duco, in ivory and black. It was owned and driven by the Countess of Roscoff. Another first prize went to a Cadillac all-weather body by Fleetwood, finished in gray. A Cord cabriolet in iron gray with red filets, driven by Mlle. Suzy Vernon, also won a first prize.

In the competition were 240 cars. About 75 per cent. were of French manufacture, while half of the balance were American cars, including Cadillac, Auburn, Buick, Cord, Ford, Lincoln, Chrysler, Chevrolet and Duesenberg. A certain number of these cars, however, had French custom-built bodies.

The competition showed that black still has the leading place in automobile colors; however, the majority of black cars have a touch of some bright color, either in the decoration or on the wheels. Apart from black, among actual colors, beige, blue, gray and green, all of these mostly in light shades, were fairly evenly divided, while there was also a strong contingent of cars finished in ivory and white. Red, maroon and yellow made up the balance.

There was nothing new in the way of decoration, and the popularity of chromium-plated metal, sparingly used, mostly in the shape of filets, continues. There seems, however, to be a trend toward painting cars in two colors—that is to say, the actual body in one color and the base, forepart, including hood, in another.

E. H. M'GRAW JOINS MULTIBESTOS COMPANY

Cambridge, Mass., July 16.—Multibestos Company of Cambridge, Mass., manufacturer of brake linings, clutch facings, etc., is expanding its sales force through the addition of E. H. McGraw as representative of the Multibestos eastern Pennsylvania territory.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

CUMULATIVE NEW PASSENGER CAR

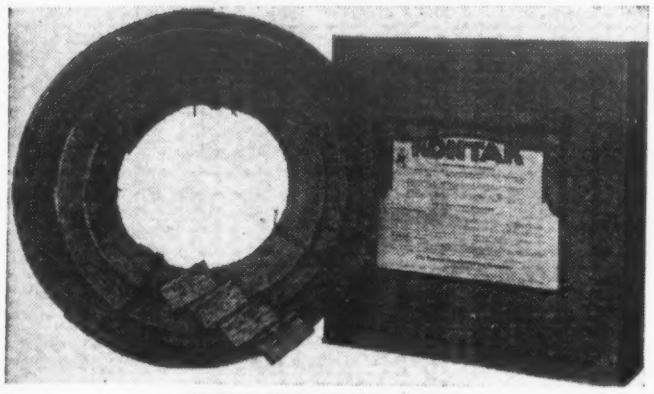
In this table 12 states and the District of Columbia — **Returns for today:**

States	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	De Vaux	Dodge	Durant	Essex	Ford	Franklin	Graham	Hudson	Hupmobile	La Salle
Arkansas	1		12		305	22		6		23		1	174		8	1	1	1
Delaware	5	1	47	4	200	20		3		6	6	10	162		1	5	2	2
Illinois	261	10	388	97	2979	416	21	191	35	368	15	229	3429	20	147	88	115	68
Indiana	126	2	151	20	1304	130	5	142	8	147	11	115	1119	4	50	47	39	6
Maryland	54	2	118	15	1347	80	1	42	2	40	17	76	915	5	38	27	43	7
Minnesota	54	2	97	6	1651	112		47	10	85	11	85	923		62	39	33	8
Montana	7	1	27	1	241	29		22	4	19	6	9	186	4	3	7	1	2
N. Dakota	5	1	26		349	19		1	2	22	7	12	271		7	9	3	1
S. Ca'lina	14	2	40	1	670	42		22		32		20	537		1	14	10	4
Utah	11		20	5	278	9		10	10	27	3	27	213		10	10	5	1
W. Va.	28	4	43	6	686	84		29	8	83	1	41	608	1	32	20	14	4
Wisconsin	76	2	175	13	1278	117	7	70	35	124	16	107	885	3	37	36	25	12
Dist. of C.	40	4	124	12	833	56	1	50		67	6	44	935	3	25	11	34	11
Totals	682	31	1268	180	12121	1136	35	635	114	1043	99	776	10357	40	421	314	325	127
Ark., '30	1	1	21	1	280	14		9		23	6	14	430		7	5	2	2
Dela., '30	1		46	11	189	35	1	5		5	11	13	348	1	7	6	10	5
Ill., 1930	68		656	61	3117	490	26	298		449	71	314	6752	58	232	167	217	88
Ind., '30	36	4	176	11	1324	140	11	130		173	30	165	2568	7	61	60	49	20
Md., '30	12		131	7	1066	83	1	24		69	18	99	1429	4	72	31	45	11
Minn., '30	7		93	6	1725	139	3	43		92	23	69	2789	2	93	35	53	14
Mont., '30	5		27	3	270	26	2	29		22	13	26	369	6	4	9	14	7
N. D., '30	1		23	1	590	47		8		35	23	23	831	1	17	12	2	
S. C., '30			34	1	389	16		23		20	2	26	799	1	5	15	9	
Utah, '30	9		28	5	324	34	2	31		42	45	35	586	2	33	17	9	3
W. Va., '30	6		60	2	805	63	3	35		129	29	69	1265	6	60	30	21	8
Wis., '30	19		208	14	1666	168	2	71		170	48	160	2591	14	96	71	36	6
D. of C., '30	11		68	7	431	32	1	18		33	13	46	1078	3	39	22	32	15
Totals, '30	176	5	1571	130	12176	1287	52	724	*	1262	332	1059	21835	105	726	480	499	179

*Not in production

Equipment - - - Development

Rusco Announces Brake Service Package



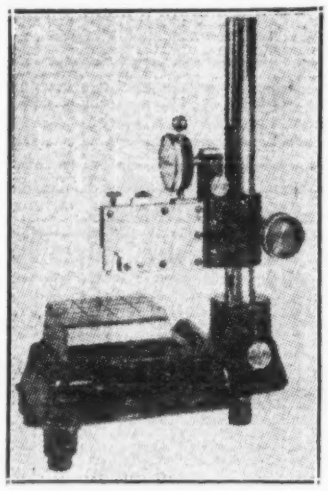
RUSCO brake service package

The new Rusco Kontak service package, is announced by the Russell Manufacturing Co., Middletown, Conn. This package will handle the brake lining replacements for approximately 90 per cent. of all passenger cars equipped with internal brakes, it is claimed. The new lining is a semi-moulded lining put up in rolls. The box contains four 21-ft. rolls of brake lining of assorted sizes.

SIMPLICITY FEATURES PRECISION AMPLIFYING COMPARATOR

Amplifying mechanism of simple construction is a feature of the precision amplifying comparator marketed by the Precision Gage and Tool Company, Dayton, O. A close-coupled two-piece movement mounted on hardened knife edges is employed and there are no bearings, pins, trunnions or springs. This movement is inclosed in a dust-proof case, and the action is said to be such as to eliminate lost motion and to produce amplifying action that is positive, accurate and sensitive. Wear ordinarily is negligible, but compensation for slight wear has been provided. The amplifying ratio is 10 to 1 in the standard equipment.

The indicator dial, on which the amplified movement is read, is graduated in half ten-thousandths and has a range of 0.013 inch. Work up to 8½ inches in height may be gaged when placed on the platen, and work 14 inches in height may be gaged from a surface plate. The

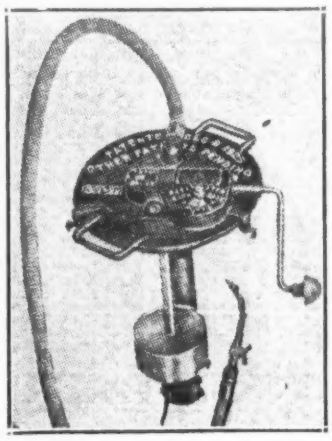


AMPLIFYING comparator

platen or anvil is adjustable to accommodate work of odd shale, and special fixtures can be mounted conveniently in place of the regular platen. The rear foot of the instrumental support is adjustable.

Th small ball point at the extremt tip of the comparator arm is tipped with stellite and is about 3-16 inch in diameter. A diamond tip is furnished as an extra. The instrument is mounted on a heavy base that measures 6x10 inches.

ROYWAY GREASE PUMP REGISTERS INDIVIDUAL AND TOTAL SALES



ROYWAY grease pump unit

The metered Royway differential grease pump is the development of the Roy Manufacturing Company, Quincy, Mass. It can be installed securely on any standard 100-pound drum and quickly changed.

The unit incorporates an individual sales register, which can be returned to zero after each sale by means of a push button. A total sales meter provides a continuous record of sales.

G. A. BLANCHARD ADDRESSES CHEVROLET SERVICE GROUPS

Springfield, Mass., July 16.—An address by G. A. Blanchard of Boston, zone service manager, featured the meeting of Western Massachusetts Chevrolet Service Managers Service Association in Hotel Kimball. He spoke on "Service as It Is Sometimes Served."

Constituents of Exhaust Gas

(Continued from Page 6)

or small quantities. So, because of this lack of knowledge, many make no effort to stay away from exhaust fumes.

Carbon monoxide gas attacks by stealth. It is tasteless and odorless, such smell as may be present in exhaust gases being due to other causes and not, as many believe, to the presence of carbon monoxide.

This gas has two methods of attack, and in either case the final result is the same. It attacks its human victim directly when the percentage in a room exceeds one-half of 1 per cent. This direct attack gives practically no warning, except a slight dizziness, which comes on so suddenly that the victim has no time to escape from the presence of the gas.

In these cases the gas attacks by absorption into the blood at a rate which is faster than the blood can change it into carbon monoxide and reject it in this form. Apparently it is carried to the brain cells, producing a species of brain paralysis, which explains, in part, why the victims of this direct action may never recover consciousness. And even if they do recover, the effects may easily become permanent and result in occasional dizzy spells and other ills, such as lapses of memory and a failure of the thought co-ordination centers.

Acute attacks of carbon monoxide gas result in the destruction of the oxygen-carrying part of the blood, which is the hemoglobin, or red coloring matter of the blood. Still another phase of this type of gas poisoning is the actual suffocation of the victim by the formation of excessive quantities of carbon dioxide in the lungs. This produces unconsciousness by simply excluding the oxygen from the lungs.

By far the worst part of the exhaust gas situation is the cumulative effect of breathing small quantities of the carbon monoxide contents of the gas. This might be called the indirect attack which this gas makes upon the human system. It is indirect because it opens the system to the attack from other outside disease sources. The condition produced is similar to anaemia, in that the red corpuscles of the blood are not only depleted in numbers but are reduced in their oxygen-carrying capacity as well. Thus the body not only lacks the power to rebuild itself but lacks the power to fight disease also.

The lungs themselves are laid open to the attack of the streptococcus, or pneumonia germ, by the irritating effects of the gas. This deadly germ meets only a feeble resistance from the anaemic condition which prevails, and thus loses no time in getting to work, with a fine chance of attaining fatal results.

A condition known as chronic gastritis is still another result of breathing exhaust gas fumes, although this is not the only cause for this distressing ailment. This is a condition where gas forms in the region of the heart, seriously interfering with its action.

The kidneys, as one of the eliminating channels of the body, are sometimes seriously affected in their endeavors to throw off the poison.

The effects on the brain centers are substantially the same, whether the gas is taken in large or small quantities. We may thus expect to find the same conditions prevailing in this respect in all cases of carbon monoxide poisoning: namely, lack of thought co-ordination and a paralyzing influence through the body, which may make itself apparent in a number of different ways.

On some occasions the brain sends out a warning in the shape of a violent headache. These headaches are not always present, and even when they are present they are not conclusive as to their cause. Another peculiarity of carbon monoxide poisoning is the creating of what approaches an insane desire for a certain kind of food. This desire is accompanied by intense hunger, and may be preceded by a severe headache. This condition is rare, however.

This may be better understood if we understand the meaning of cumulative poison effects. In the case of carbon monoxide this is shown by the counting of the red blood cells, and also by an examination of their color by means of color charts. An actual shortage of red cells below the normal number of 5,000,000 cubic centimeter may be found. Or in the other case the cells themselves may be short of hemoglobin, or coloring. In either of these cases time is required to throw off the poison and rebuild the cell or to create new calls, as the case may be.

The time required to accomplish this is so long that the breathing of minute quantities of carbon monoxide may cause the absorbtion of the poison to proceed at a faster pace than the speed of the elimination. In the manner the poison slowly accumulates in the system without the victim becoming aware of what is happening until the full effects become apparent. When this condition occurs it is sometimes too late for the victim to ever completely recover from the effects of the poison.

When it is known that each gallon of gasoline produces when burned in an average automobile engine more than 60 cubic feet of carbon monoxide gas, then it can be readily understood why fatal gas concentrations are so easily reached in garages and laboratories, and it will be equally apparent that smaller and ultimately equally destructive concentrations are almost always present in these places.

It is impossible to use too much care in avoiding this gas, as will be readily understood from the foregoing.

The challenge which the elimination of carbon monoxide gas from engine exhaust gas offers to automotive engineers would appear to be much greater than the detonation problem. In importance to human health it would appear to far exceed this other problem in its value to the world at large.

Perhaps the analysis of the exhaust gases, together with an analytical study of these results, will point the way to an answer to this problem, a problem which is so large as to be unbelievable when the true facts are known.

REGISTRATION STATISTICS, JUNE, 1931

Arkansas, Indiana

States	Lincoln	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
Arkansas			11	1	4	1			14	16	1	9		4			616
Delaware	1	1	11	5	16	6		2	6	30		7		4	2		565
Illinois	33	8	192	74	560	130	24	26	145	585	22	303	1	213	34	14	11,241
Indiana	2	23	52	22	140	13		5	84	181	9	143	3	138	3	7	4,251
Maryland	7	3	90	33	48	26	10	9	55	167	10	63	4	49	7	2	3,412
Minnesota	3		37	17	99	13		4	155	219	5	64	4	144	9		3,998
Montana		1	16	7	13			1	21	36		8	2	24	2		700
N. Dakota	1	1	13	3	10				32	41	3	9	3	33	5		889
S. Ca'lina	1		3	2	16	3			24	35	2	10		7			1,512
Utah		2	15	5	13	2			3	17	1	11	1	10	1		720
W. Va.	5	1	23	19	40	8			84	103	11	40		91	2	1	2,120
Wisconsin	4	4	149	34	102	24	2	3	97	224	11	102	5	112	12	3	3,906
Dist. of C.	6	7	47	18	66	25		6	30	107	2	78		28	6	1	2,683
Totals	63	51	659	240	1127	251	36	56	750	1761	77	847	23	857	63	28	36,613
Ark., '30	2		9	3	4	1		3	21	8		10	2	2	1		882
Dela., '30	1	1	3	5	4	17		2	22	29		9	3	6	1	1	798
Ill., 1930	46	72	405	97	446	323	13	42	543	409	38	422	82	186	88	63	16,339
Ind., '30	7	67	113	42	142	46	4	5	238	171	15	150	30	71	15	24	6,105
Md., '30	4	11	66	32	59	57	1	8	111	98	12	73	36	37	16	24	3,747
Minn., '30	3	12	76	37	104	32	1	2	392	181	13	116	67	124	26	7	6,379
Mont., '30		5	25	11	9				37	33	4	15	16	13	5		1,005
N. D., '30		3	43	14	21	1			78	52	3	21	39	53	9	3	1,954
S. C., '30	1	1	9	2	10	9			16	16	2	8	3	2	1		1,420
Utah, '30		7	17	16	21	12		1	22	19	3	23	4	2	2	3	1,357
W. Va., '30	2	23	41	32	40	28		3	118	91	5	46	45	76	16	5	3,162
Wis., '30	1	19	199	60	138	50	10	15	330	207	21	146	69	122	22	15	6,764
D. of C., '30	5	5	21	29	57	48	12	4	58	71	3	43	6	6	13	6	2,236
Totals, '30	72	226	1027	380	1055	624	41	85	1986	1385	119	1082	402	700	215	151	52,148

Major Specifications and Mechanical Details of 1931 Commercial Cars

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak R. P. M.	Type Cam-shaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Make Transmission	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Wgt.	Standard Tire Sizes Front	Rear
*Am La France Chief	2½	3650	Own	L	6	3¾x5	331.0	33.7	65@2100	G	G & O	Borg	Spic	Ross	Str	Vac	DR	Own	4	Tim	Wo	31.2	B4IMV	—	156	6200	32x6	32x6D
*Am. La France Chieftain	3-4	6725	Own	L	6	4½x6	411.0	40.8	85@1800	G	G & O	Borg	Spic	Ross	Zen	Vac	DR	Own	4	Tim	Wo	28.8	B4IMV	—	175	7200	36x8S	36x8D
Am. La France Big Chief	6	5500	Own	L	6	4⅛x5⅛	372	48.6	115@1600	—	—	Own	—	Ross	Zen	Vac	DR	Own	4	Own	2 R	32.8	W4IA	—	226	10600	40x8S	40x8SD
Austin	400	475	Own	L	4	2.2x3	45.6	7.8	13@3000	G	Hex	Rock	Spic	Own	Til	Gra	Aut	W-G	3	Sal	Sp	8.25	O4M	76.5	75	1210	3.75x18	3.75x18
Autocar A	1½-2	3200	Own	L	6	4 x4¾	358.0	38.4	82@2400	G	Per	Long	Spic	Ross	Str	Vac	DR	Br-L	4	Own	Sp	27.9	LO4ID	460	150	5060	34x7	34x7
Autocar D	2-2½	3500	Own	L	6	4 x4¾	358.0	38.4	82@2400	G	Per	Long	Spic	Ross	Str	Vac	DR	Br-L	4	Own	2 R	33.5	LO4ID	460	150	5300	34x7	34x7D
†Autocar SH	2½-3	4300	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	44.0	O2IM	328	114	6770	34x7	34x7D
Autocar SCH	2½-3	4300	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	44.0	O2IM	328	157	6860	34x7	34x7D
†Autocar H	3	4190	Own	L	4	4½x5½	350.0	32.4	45@1450	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	48.6	O2IM	328	114	6770	34x7	34x7D
†Autocar HS	3½	4600	Own	L	4	4½x5½	350.0	32.4	45@1450	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	54.3	O2IM	516	114	7900	40x8	40x8D
†Autocar SHS	3-3½	4800	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	54.3	O2IM	516	114	7900	40x8	40x8D
Autocar SCHS	3-3½	4800	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	54.3	O2IM	516	157	8180	40x8	40x8D
Autocar N	3-3½	4600	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	41.2	OL4IH	574	174	7990	36x8	36x8D
Autocar TEA	3-3½	5350	Own	L	6	4¼x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DH	Own	12	Own	2 R	101.1	LO4ID	602	192	8900	36x8	36x8D
Autocar TFA	3½-5	6100	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	12	Own	2 R	101.3	LO4ID	602	192	9300	38x9	38x9D
Autocar C	3½-5	5500	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	51.7	O2IM	516	172	9500	42x9	42x9D
Autocar CE	7½	6000	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2R	51.7	LO41V	670	172	10500	36x7S	40x8SD
Autocar F	7½	6800	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Br-L	Spic	Ross	Str	Vac	DR	Br-L	7	Tim	Wo	94.0	LT4DV	674	173	11000	36x7S	40x8SD
*Autocar G	10	9000	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Br-L	Spic	Ross	Str	Vac	DR	Br-L	7	Tim	Wo	100.0	T6IA	720	171	13000	36x8	36x8D
Brockway 60	*6000	995	Con	L	6	3¾x4	214.7	27.3	61@3000	C	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	3	Col	Sp	19.8	B4IM	297	132	3200	30x5	30x5
Brockway 65	6500	1195	Con	L	6	3¾x4⅝	248.2	27.3	65@2700	C	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	3	Col	Sp	21.3	C4IM	244	137	3400	30x5	30x5
Brockway 75	7500	1290	Con	L	6	3¾x4⅝	248.2	27.3	65@2700	C	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	4	Col	Sp	25.6	C4IM	244	137	3450	32x6	32x6
Brockway 90	9000	1525	Con	L	6	3¾x4⅝	248.2	27.3	65@2700	C	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	4	Col	Sp	20.9	C4IM	292	149	4050	32x8	32x6
Brockway 120	12000	1990	Con	H	6	4 x4⅛	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Tim	Sp	31.3	L4IH	353	156	5200	32x6	32x6D
Brockway 140	14000	2495	Con	H	6	4 x4⅛	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	35.3	L4IHV	356	156	5500	32x6	32x6D
Brockway 141	17000	2935	Con	H	6	4 x4⅛	311.0	38.4	73@2400	C	G & G	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	46.2	L4IHV	356	170	6200	32x6	32x6D
Brockway 170	17000	3160	Con	H	6	4¼x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	46.6	L4IHV	380	170	6800	32x6	32x6D
Brockway 175	17500	3660	Con	H	6	4¼x4¾	427.5	45.9	100@2400	C	G & O	—	Spic	Ross	Zen	P	Aut	—	5	Wis	2 R	45.3	L4IHV	380	170	7200	34x7	34x7D
Brockway 195	19500	3820	Con	H	6	4¼x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	49.5	L4IHV	471	170	7500	34x7	34x7D
Brockway 190	19000	4185	Con	H	6	4¼x4¾	380.9	40.8	89@2400	C	Long	Borg	Spic	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	78.6	T2IMV	471	168½	7625	34x7	34x7D
Brockway 220	22000	4560	Con	H	6	4¾x4¾	427.5	45.9	100@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Tim	Wo	50.7	L4IHV	546	170	8300	36x8	36x8D
Brockway 250	25000	5950	Con	H	6	4¾x4¾	427.5	45.9	100@2400	C	Long	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Tim	Wo	63.7	LT4IVA	664	182	10000	40x8	40x8D
Brockway 290	30000	7250	Con	L	6	4¾x5¾	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	95.0	T4IA	676	182	10750	38x7P	40x14S
*Brockway 640	40000	9700	Con	L	6	4¾x5¾	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	90.9	T4IA	864	212	14000	38x7P	36x10S
Chevrolet	½	355	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	3	Own	Sp	13.6	O4IM	101	109	1880	19x4.75	19x4.75
Chevrolet	1½	590	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	4	Own	Sp	33.4	O4IM	170	157	3015	30x5	30x5D
Chevrolet	1½	520	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	4	Own	Sp	33.4	——	—	131	2700	30x5	32x6
Commerce Series S 11	1	1600	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Col	Sp	25.5	L4IH	297	142	3900	30x5P	30x5P
Commerce Series S 11	1½	1900	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4300	30x5P	30x5DP
Commerce Series 40	1½	2990	Bud	L	6	3⅜x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4700	34x5P	34x5DP
Commerce Series S 11	2	2030	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4500	32x6P	32x6D
Commerce Series 40	2	3240	Bud	L	6	3⅜x5	309.6	31.5	64@2105	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4900	32x6	36x6D
Commerce Series 40	2½	3240	Bud	L	6	3⅜x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	5100	36x6P	36x6D
Commerce Series 60	2½	4580	Bud	L	6	4⅛x5⅛	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7000	36x6P	38x7D
Commerce Series 60	3	4680	Bud	L	6	4⅛x5⅛	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7100	36x6P	38x7D
Commerce Series 80	3½	5250	Bud	L	6	4¼x5⅛	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8200	36x6S	36x6S
Commerce Series 80	4	5330	Bud	L	6	4¼x5⅛	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8400	36x6S	36x14S
Commerce Series 100	5	5830	Bud	L	6	4¼x5⅛	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	95.0	——	—	175	9800	36x6S	40x14S
Day Elder 60	1	1095	Con	L	6	3⅜x4	214.7	27.3	61@3000	C	G & O	Borg	Spic	Ross	Zen	P	DR	W-G	4	Tim	Sp	36.3	B4IM	241	135	3200	20x6.00B	20x6.50B
Day Elder 85	1½	1645	Con	L	6	3⅜x4⅝	248.3	27.3	65@2700	C	Per	Borg	Spic	Ross	Zen	P	DR	W-G	4	Tim	Sp	42.3	L4IH	229	135	3750	20x6.00B	20x6.50DB
Day Elder 110	2	2095	Con	L	6	3⅜x4⅝	248.3	27.3	65@2700	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Sp	44.9	L4IH	306	156	4600	20x7.00B	20x7.00DB
Day Elder 130	2½	2895	Con	H	6	4 x4⅛	311.0	38.4	73@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Sp	40.7	L4IH	354	157	6400	20x7.50B	20x7.50DB
Day Elder 160	3	3695	Con	H	6	4 x4½	339.3	38.4	82@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Wo	36.1	L4IH	398	156	6600	20x7.50B	20x9.00DB
Day Elder 200	4	4295	Con	H	6	4 x4½	339.3	38.4	82@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Wo	43.5	L4IHV	489	156	7400	20x9.00B	20x9.00B
Day Elder 240	5	5500	Con	H	6	4¾x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	4	Tim	Wo	50.8	L4IHV	520	162	9300	38x9P	38x9DP
*Day Elder 285	8	6000	Con	H	6	4¾x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	71.2	L6IHV	674	164	12000	20x8.25B	20x8.25DB
*Day Elder 345	10	7500	Con	H	6	4¾x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	79.9	W61A	400	164	12500	20x9.00B	20x9.00DB
*Day Elder 402	12	9000	Con	L	6	4¾x5¾	611.4	54.2	127@2300	G	Per	Br-L	Blo	Ross	Zen	P	DR	Br-L	7	Tim	Wo	84.6	W61A	490	164	14000	20x9.75B	20x9.75DB
Diamond T 216	1½	695	Her	L	6	3⅜x4¼	228.0	27.3	56@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Cla	Sp	——	L4IH	252	135⅛	3130	20x6.50B	20x6.50B
Diamond T 291	1½-2	1325	Her	L	6	3½x4½	268.0	29.4	60@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	Cov	4	Cla	Sp	——	L4IH	279	156¾	4500	20x6.50B	20x6.50DB
Diamond T 303	2-2½	1585	Her	L	6	3¾x4½	298.0	33.7	67@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	Cov	4	Cla	Sp	——	L4IHV	350	159¾	5000	20x7.00B	20x7.00DB
Diamond T 351	2½-3	2050	Her	L	6	4 x4½	339.0	38.4	74@2400	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	4	Wis	2 R	——	L4IHV	408	168	5600	20x7.50B	20x7.50DB
Diamond T 501	3	2375	Her	L	6	4 x4½	339.0	38.4	74@2400	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	4	Wis	2 R	——	L4IHV	408	176½	6400	20x8.25B	20x8.25DB
Diamond T 506	3	2675	Her	L	6	4¼x4½	383.0	43.3	85@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	——	L4IHV	408	184	6400	20x8.25B	20x8.25DB
Diamond T 603	3-4	2975	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	——	L4IHV	499	169	7500	20x9.00B	20x9.00DB
Diamond T 606	3-4	3075	Her	L	6	4½x4¾	453.0	48.6	100@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	——	L4IHV	499	187½	7500	20x9.00B	20x9.00DB
Diamond T 750	4-5	4100	Her	L	6	4⅝x5¼	529.0	51.3	——	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	——	W41	552	178	8300	22x9.75B	22x9.75DB
*Diamond T 801	4	4140	Her	L	6	4⅜x4¾	428.4	45.9	94@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Br-L	7	Own	Wo	——	L6IHV	571	189½	8300	36x8P	36x8DP
*Diamond T 1200	6	5600	Her	L	6	4½x4¾	453.3	48.6	100@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	——	T4IA	238	190	11000	34x7P	34x7DP
*Diamond T 1600	8	6220	Her	L	6	4⅝x4¾	479.0	51.3	104@2400	G	G & O	Cov	Spic-Blo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	——	T4IA	238	190	11700	36x8P	36x8DP
*Diamond T 1601	8	7500	Wak	L	6	5 x5¾	677.4	60.0	127@2000	G	G & O	Br-L	Spic-Blo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	——	T4IA	238	194	12500	36x8P	36x8D
Dodge Bros. UF 19	½	435	Own	L	4	3⅝x4¾	196.0	21.0	48@2800	G	Fed	Borg	Own	W-G	Car	P	DR	Own	3	Own	Sp	14.2	L4IH	114	109	1925	19x5.00	19x5.00
Dodge Bros. F 10	¼	515	Own	L	6	3¼x4¼	211.5	25.3	66@3200	C	Fed	Borg	Un	W-G	Car	P	DR	Own	3	Own	Sp	14.2	L 4IH	114	109	1975	19x5.25	19x5.25
Dodge Bros. U 1	¾	490	Own	L	4	3⅝x4¼	196.0	21.0	45@2800	G	Fed	Borg	Spic	Han	Car	Vac	NE	Own	3	Own	Sp	21.6	L4IH	189	124	2260	20x6.00	20x6.00
Dodge Bros. DA 1	¾	595	Own	L	6	3⅝x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Spic	Han	Zen	Vac	NE	Own	4	Own	Sp	36.8	L4IH	189	124	2360	20x6.00	20x6.00
Dodge Bros.	1	495	Own	L	4	3⅝x4¼	196.0	21.0	45@2800	G	Fed	Borg	Spic	Han	Car	Vac	NE	Own	3	Own	Sp	36.1	L4IH	205	133	2590	20x6.00	32x6
Dodge Bros.	1	595	Own	L	6	3⅝x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Spic	Han	Zen	Vac	NE	Own	3	Own	Sp	33.4	L4IH	205	133	2690	20x6.00	32x6
Dodge Bros. UF 30	1¼	595	Own	L	4	3⅝x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	W-G	Car	P	DR	Own	4	Own	Sp	37.1	L4IH	120	136	2581	20x6.00	32x6
Dodge Bros. UF 31	1¼	670	Own	L	4	3⅝x4¾	196.0	21.0	48@2800	G	Fed	Borg	Cle	W-G	Car	P	DR	Own		Own	Sp	32.1	L4IH	229	165	2757	20x6.00	32x6
Dodge Bros. F 31	1½	770	Own	L	6	3¼x4¼	211.5	25.3	66@3200	G	Fed	Borg	Cle	W-G	Car	P	DR	Own		Own	Sp	32.1	L4IH	229	165	2807	20x6.00	32x6
Dodge Bros. F 30	1½	695	Own	L	6	3¼x4¼	211.5	25.3	66@3200	C	Fed	Borg	Cle	W-G	Car	P	DR	Own	4	Own	Sp	37.1	L4IH	120	136	2631	20x6.00	32x6
Dodge Bros. F 35	1½	1425	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	G	Long	Borg	Cle	Han	Zen	P	DR	Own	4	Own	Sp	41.4	L4IH	311	140	3780	20x6.00	20x6.00D
Dodge Bros. F 36	1½	1485	Own	L	6	3⅜x3⅞	208.0	27.3	63@3200	G	Long	Borg	Cle	Han	Zen	P	DR	Own	4	Own	Sp	41.4	L4IH	311	165	3972	20x6.00	20x6.00D
*Dodge Bros. F 40	2	1995	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	L4IH	350	150	5173	20x6.50	20x6.50D
*Dodge Bros. F 41	2	2085	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	L4IH	350	165	5211	20x6.50	20x6.50D
Dodge Bros.	3	1515	Own	L	6	3⅜x4½	241.6	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	46.3	L4IH	382	135	4235	32x6	32x6D
Dodge Bros.	3	1565	Own	L	6	3⅜x4½	241.6	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	41.4	L4IH	382	165	4520	32x6	32x6D
Dodge Bros.	3	1615	Own	L	6	3⅜x4½	241.6	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	46.3	L4IH	382	185	4715	32x6	32x6D
Dodge Bros. F 60	3	2645	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	2 R	48.8	L4IH	416	146	5543	32x6	32x6D
*Dodge Bros. F 61	3	2575	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	48.8	L4IH	416	170	5789	32x6	32x6D
*Dodge Bros. F 62	3	2695	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	48.8	L4IH	416	195	5901	32x6	32x6D
Essex Com.	¾	445	Own	L	6	2¾x4½	163.0	18.2	55@3300	C	Har	Own	Spic	Gem	Mar	Vac	Aut	Own	3	Own	Sp	—	4M	—	110	2125	20x5	20x5.50
Federal D	1½	795	Con	L	6	3⅞x4¼	200.5	24.0	48@2500	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L4IH	377	131	3280	20x6.00	32x6
Federal E 6	1½	895	Con	L	6	3⅜x4	215.0	27.3	60@2600	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	36.3	L4IH	377	132	3330	20x6.00	32x6
Federal F 7	1¾	1525	Con	L	6	3⅜x4⅝	248.0	27.3	64@2500	C	Long	Borg	Spic	Gem	Zen	P	DR	Own	4	Tim	Sp	29.2	L4IH	414	132	3810	30x5	30x5D
Federal A 6	2	1855	Con	L	6	3⅜x4⅝	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Cla	Sp	38.5	L4IH	450	151	4635	32x6	32x6D
Federal A 6 T	2½	2185	Con	L	6	3⅜x4⅝	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Tim	Sp	47.1	L4IHV	659	151	5185	32x6	32x6D
Federal A 6 T W	2½	2360	Con	L	6	3⅜x4⅝	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Tim	Wo	52.8	L4IHV	659	151	5185	32x6	32x6D
*Federal D S W	2½-3	1050	Con	L	4	3⅞x4¼	200.5	24.0	48@2500	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	566	140	3980	20x6.00	32x6
*Federal E 6 S W	2½-3	1150	Con	L	6	3⅜x4	215.0	27.3	60@2600	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	566	145	4030	20x6.00	32x6
Federal T 10 B	2½-3	2740	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Sp	44.5	L4IHV	659	165	6645	34x7	34x7D
Federal T 10 W	2½-3	2915	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Wo	44.0	L4IHV	659	165	6645	34x7	34x7D
Federal T 10 D R	2½-3	2915	Con	H	6	4 x4⅛	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	2 R	45.6	L4IHV	659	165	6645	34x7	34x7D
Federal U 6	3-3½	3860	Con	H	6	4 x4½	339.0	38.4	85@2200	C	Long	Borg	Pet	Ross	Str	P	DR	Br-L	7	Tim	Wo	64.6	L4IHV	676	165	7315	34x7	34x7D
Federal U 6 D R	3-3½	3860	Con	H	6	4 x4½	339.0	38.4	85@2200	C	Long	Borg	Pet	Ross	Str	P	DR	Br-L	7	Tim	2 R	69.6	L4IHV	767	165	7315	34x7	34x7D
Federal 4 C 6 A	4-5	4735	Con	H	6	4¼x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	72.2	L4IHV	894	192	8460	36x8	36x8D
Federal 4 C 6 A D R	4-5	4735	Con	H	6	4¼x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	2 R	80.6	L4IHV	894	192	8460	36x8	36x8D
Federal 4 C 6 A B	4-5	4960	Con	H	6	4¼x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	72.2	T4IA	921	192	8980	36x8	36x8D
Federal 4 C 6 A B D R	4-5	4960	Con	H	6	4¼x4¾	381.0	45.9	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	2 R	80.6	T4IA	421	192	8980	36x8	36x8D
*Federal U 6 S W	6	6000	Con	H	6	4¼x4¾	380.9	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	71.3	L6IHV	1093	201	10395	34x7	34x7D
*Federal U 6 S W A B	6	6500	Con	H	6	4¼x4¾	380.9	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	71.3	TrIA	867	201	10395	34x7	34x7D
Federal X 8	7½	5085	Con	L	4	5 x6	471.0	40.0	61@1350	G	Long	Borg	Pet	Gem	Zen	Vac	AB	Br-L

Major Specifications and Mechanical Details of 1931 Commercial Cars

(CONTINUED FROM PAGE EIGHT)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Make Transmission	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Wgt.	Standard Tire Sizes Front	Rear
General Motors T 42	*15000	1845	Buick	H	6	3 1/16x4 5/8	257.5	28.3	76@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	Sp	33.4	B4IM	524	141	4725	32x6P	32x6DP
General Motors T-44	*16000	2095	Buick	H	6	3 1/16x4 5/8	257.5	28.3	76@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	2 R	40.9	B4IM	524	141	5005	34x7P	34x7DP
General Motors T-51	*19000	2565	Own	H	6	3 3/4x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	Sp	40 6	B4IM	574	155	5955	34x7P	34x7DP
General Motors T-55	*19000	2690	Own	H	6	3 3/4x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	2 R	49.8	B4IM	574	155	6095	34x7P	34x7DP
General Motors T-60	*22000	3035	Buick	H	6	3 3/4x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Tim	Wo	52.5	B4IM	685	154	6925	34x7P	34x7DP
General Motors T-61	*22000	3445	Own	H	6	3 3/4x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Str	P	DR	Mun	4	Tim	Wo	52.5	B4IMV	685	154	6965	20x9.00B	20x9.00DB
General Motors T-82	*24000	3795	Own	H	6	3 3/4x5	331.4	33.7	94@2500	G	Long	Own	Pet	Sag	Str	P	DR	Mun	12	Tim	Wo	142.5	B4IM	793	155	7500	20x9.00B	20x9.00DB
General Motors T-83	*24000	3990	Own	H	6	3 3/4x5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Str	P	Dr	Mun	12	Tim	Wo	142.5	B4IMV	865	155	7670	20x9.00B	20x9.00DB
General Motors T-85	*26000	5600	Own	H	6	4 1/4x5 1/2	468.0	43.3	115@2200	C	Long	Own	Spic	Sag	Str	P	DR	Ful	4	Tim	2 R	53.3	B4IMV	865	171	10630	20x9.75B	20x9.75DB
†General Motors T-90	*28000	5285	Own	H	6	3 3/4x5	331.4	33.7	94@2500	G	Long	Own	Pet	Sag	Str	P	DR	Mun	12	Tim	Wo	129.0	Br1A	868	185	9400	20x7.50B	20x7.50DB
†General Motors T-95	*34000	7545	Own	H	6	4 1/4x5 1/2	468.0	43.3	115@2200	C	Long	Own	Spic	Sag	Str	P	DR	Ful	4	Tim	Wo	53.3	B6IA	1191	189	13250	34x7P	34x7DP
†General Motors T-96	*34000	7195	Own	H	6	4 1/4x5 1/2	468.0	43.3	115@2200	C	Long	Own	Spic	Sag	Str	P	DR	Ful	4	Tim	2 R	51.1	B6IA	1191	189	12850	34x7P	34x7DP
Gramm A X 4	1	795	Con	L	4	3 7/8x4	200.4	24.0	50@2800	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3300	20x6.00	20x6.50
Gramm A X 6	1	895	Con	L	6	3 3/8x4	214.0	27.3	61@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3550	20x6.00	20x6.50
Gramm B X 4	1½	895	Con	L	4	3 7/8x4 1/4	200.4	24.0	50@2800	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3475	20x6.00	20x6.00D
Gramm B X 6	1½	995	Con	L	6	3 3/8x4	214.7	27.3	61@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3725	20x6.00	20x6.00D
Gramm B	1¾	1495	Lyc	L	6	3 1/4x4 1/2	224.0	25.3	61@2900	G	Per	Own	Blo	Ross	Zen	Vac	Aut	Cov	4	Tim	Sp	34.3	L4IH	278	140	4150	20x6.50	20x6.50D
†Gramm C X 4	2	1095	Con	L	4	4 1/4x4 1/4	227.0	27.2	55@2600	G	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	37.0	L4IH	452	131	3900	20x6.50	20x6.50D
Gramm 16	2	1095	Knight	S	6	2 1/2x4 3/8	177.9	20.7	53@2600	C	Own	Borg	Blo	Ross	Til	Vac	Aut	Cov	4	Eat	Sp	—	——	—	151	——	30x5	32x6
Gramm C X 6	2	1295	Con	L	6	3 3/8x4 3/8	248.2	27.3	70@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	37.0	L4IH	452	131	4150	20x6.50	20x6.50D
Gramm 21	2½	1295	Knight	S	6	3 3/8x4 3/8	255.	27.3	70@2600	C	Own	Jon	Blo	Ross	Til	Vac	Aut	Cov	4	—	—	—	——	—	164	——	32x6	34x7
Gramm C	2	1795	Lyc	L	6	3 3/8x4 1/2	278.6	31.5	82@2600	G	Per	Own	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	31.0	L4IH	353	160	4800	20x7.00	20x7.00D
Gramm D	2½	1995	Lyc	L	6	3 3/4x4 1/2	299.0	33.7	90@2200	G	Per	Jon	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	33.0	L4IHV	339	160	5200	20x7.50	20x7.50D
Gramm 75	3	2395	Knight	S	6	3 3/8x4 3/8	255.	27.3	70@2600	C	Own	Jon	Blo	Ross	Til	Vac	Aut	Cov	4	Wis	2R	—	——	—	190	——	20x7.50	20x7.50D
Gramm E	3	2595	Lyc	L	6	3 7/8x5	353.8	36.0	90@2200	G	Per	Own	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	35.0	L4IHV	659	160	5950	20x8.25	20x8.25D
Gramm E Y	3	3595	Con	H	6	4 1/4x4 3/4	380.8	40.8	90@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	30.0	L4IHA	—	190	7200	20x7.50	20x7.50D
Gramm G Y	4	4345	Con	H	6	4 3/8x4 3/4	428.4	45.9	100@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Wis	2 R	28.0	BW4IM	—	210	7760	20x8.25	20x8.25D
Gramm G W	4	5175	Con	H	6	4 3/8x4 3/4	428.0	45.9	100@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Wis	2 R	—	41A	864	157	5500	20x9.00	20x9.00D
Gramm H Y	5	6545	Con	L	6	4 3/4x5 3/4	611.4	54.1	127@2300	G	Per	Ful	Blo	Ross	Zen	P	Aut	Ful	4	Wis	2 R	25.2	41A	—	236	10100	36x8	36x8D
Indiana 60	*6000	995	Con	L	6	3 3/8x4	214.7	27.3	61@3000	C	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	3	Col	Sp	19.8	B4IM	297	132	3200	30x5	30x5
Indiana 64	6500	1195	Con	L	6	3 3/8x4 3/8	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	3	Col	Sp	21.3	C4IM	244	137	3400	30x5	30x5
Indiana 74	7500	1290	Con	L	6	3 3/8x4 3/8	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Col	Sp	25.6	C4IM	190	137	3450	32x6	32x6
Indiana 89	9000	1525	Con	L	6	3 3/8x4 3/8	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Col	Sp	20.9	C4IM	292	149	4050	32x6	32x6
Indiana 111 XW	12500	1850	Her	L	4	4 x5	251.3	25.6	46@2000	G	McC	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Wis	2 R	35.2	K2IM	270	120	3740	32x6	32x6D
Indiana 120	12000	1990	Con	H	6	4 x4 1/8	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Sp	31.3	L4IH	353	156	5200	32x6	32x6D
Indiana 140	14000	2495	Con	H	6	4 x4 1/8	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	35.3	54IHV	356	156	5500	32x6	32x6D
Indiana 141	17000	2935	Con	H	6	4 x4 1/8	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	46.2	L4IHV	380	160	6200	32x6	32x6D
Indiana 170	17000	3160	Con	H	6	4 1/8x4 3/4	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	46.6	L4IHV	380	170	6800	32x6	32x6D
Indiana 175	17500	3660	Con	H	6	4 3/8x4 3/4	427.5	45.9	100@2400	C	G & O	——	Spic	Ross	Str	P	Aut	——	5	Wis	2 R	45.3	L4IHV	380	170	7200	34x7	34x7D
Indiana 195	19500	3820	Con	H	6	4 1/8x4 3/4	380.9	40.8	89@2400	C	G & O	Br-I	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	49.5	L4IHV	471	170	7500	34x7	34x7D
Indiana 190	19000	4185	Con	H	6	4 1/8x4 3/4	380.9	40.8	89@2400	C	Long	Borg	Spic	Ross	Str	P	Aut	Br-L	7	Tim	Wo	78.6	T2IMV	500	168½	7625	34x7	34x7D
Indiana 220	22000	4560	Con	H	6	4 3/8x4 3/4	427.5	45.9	100@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	50.7	L4IHV	546	170	8200	36x8	36x8D
Indiana 250	25000	5950	Con	H	6	4 3/8x4 3/4	427.5	45.9	100@2400	C	Long	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Wo	63.7	LT4IHV	664	182	10000	40x8	40x8D
Indiana 290	30000	7250	Con	L	6	4 3/4x5 3/4	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	95.0	T4IA	676	182	10750	38x7P	40x14S
*Indiana 640	40000	9700	Con	L	6	4 3/4x5 3/4	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	90.9	T4IA	864	212	14000	38x7P	36x10S
International A 2	1½	675	Wak	L	4	3 3/8x4 1/2	186.0	21.0	39@2400	G	Mod	Mec	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	39.5	BE4IM	212	136	2935	5.50x20	6.00x20
International B 2	1½	725	Wak	L	4	3 3/8x4 1/2	186.0	21.0	39@2400	G	Mod	Mec	Mec	Ross	Zen	Vac	DR	Mec	3	Own	Sp	47.3	BE4IM	212	136	2960	5.50x20	6.00x20
International A L 3	1½	1450	Lyc	L	6	3 1/4x4 1/2	224.0	25.3	52@2700	G	Mod	Own	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	42.9	B4IM	295	138	4032	20x6.00	20x6.00D
International A 4	2	1860	Own	H	6	3 3/8x4 1/2	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	47.8	BE4IM	378	145	5221	32x6	32x6D
International A 5	3	2550	Own	H	6	3 3/8x4 1/2	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	52.6	BE4IM	430	156	5895	34x7	34x7D
International A 6	3	2675	Own	H	6	3 3/8x4 1/2	279.0	31.5	67@2600	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	62.5	BE4IM	430	156	6120	34x7	34x7D
International W 1	2½	3850	Hall	H	4	4 1/4x5 1/2	312.0	28.9	59@2000	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	2 R	60.5	BE4IM	710	148	8300	36x5S	36x8S
International W 3	3½	4850	Hall	H	4	4 3/4x5 1/2	390.0	36.1	69@2000	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	2 R	70.5	BE4IM	794	160	10125	36x6S	40x12S
La France Rep. A 1	6000	795	Lyc	L	6	3 x4 3/4	201.5	21.5	60@2500	G	G & O	Borg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	36.1	L4IH	378	132	3000	20x5.50	32x6
La France Rep. C 1	7500	1295	Lyc	L	6	3 1/4x4 1/2	224.0	25.4	61@2750	G	G & O	Eorg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	29.1	L4IH	413	144	3300	20x6.00	32x6
La France Rep. D 1	9000	1595	Lyc	L	6	3 1/4x4 1/2	224.0	25.4	61@2750	G	G & O	Borg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	37.9	L4IH	448	144	3725	30x5	30x5D
La France Rep. F-3	13000	2395	Lyc	L	6	3 3/4x4 1/2	299.0	33.7	80@2500	G	Per	Ful	Spic	Han	Zen	P	Aut	Ful	4	Tim	Sp	40.1	L4IHV	628	174	5520	34x7	34x7
La France Rep. H 2	16000	2985	Lyc	L	6	3 7/8x5	354.0	36.0	85@2300	G	Per	Ful	Spic	Han	Zen	P	Aut	Ful	4	Wis	2 R	41.6	L4IHV	658	174	6370	34x7	34x7D
La France Rep. M 2	20000	4000	Wak	L	6	4 3/8x5 1/8	462.0	46.0	97@2000	G	Per	Ful	Spic	Han	Zen	P	Aut	Ful	5	Wis	2 R	48.1	L4IHV	768	174	7500	36x8	36x8D
La France Rep. 35-2	24000	5600	Wak	L	6	4 1/2x5 3/4	549.0	48.6	98@1850	G	Own	Ful	Spic	Han	Zen	P	Aut	Ful	4	Wis	2 R	45.4	L4IHV	870	174	9250	38x9	38x9D
Maccar 36 A	1½	1900	Bud	L	6	3 3/4x4 1/2	298.0	33.7	83@2800	G	Per	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Tim	Sp	30.6	L4IH	315	171	4850	32x6	32x6D
Maccar 40 A	2	2400	Bud	L	6	3 3/4x4 1/2	298.0	33.7	83@2800	G	Per	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Tim	Sp	38.8	L4IHV	325	171	5340	32x6	32x6D
Maccar 56	3	3350	Bud	L	6	3 3/4x5	311.0	33.7	72&2100	G	Per	Br-L	Spic	Ross	Str	Vac	DR	Br-L	4	Wis	2 R	37.4	L4IHV	411	183	6200	34x7	34x7D
Maccar 60	3	3950	Bud	L	6	4 1/8x5 1/8	411.0	40.8	103@2100	G	Per	Br-L	Spic	Ross	Str	Vac	DR	Br-L	4	Tim	Wo	34.3	L4IHV	411	183	6600	20x9.00	20x9.00D
Maccar 66 A	4	5500	Her	L	6	4 3/8x4 3/4	479.0	51.3	106@2100	G	Per	Br-L	Spic	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	64.5	W4IA	617.5	206	8200	20x9.75	20x9.75D
Maccar 86 A	5	5950	Her	L	6	4 3/8x4 3/4	479.0	51.3	106@2100	G	Per	Br-L	Spic	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	72.3	W4IA	623	206	9500	20x10.50	20x10.50D
†Maccar SW-86	10	7650	Her	L	6	4 3/8x4 3/4	479.0	51.3	106@2100	G	Per	Br-L	Spic	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	72.3	T6IA	103	206	11700	20x9.75	20x9.75D
††Mack B L	——	2500	Own	L	6	3 1/4x5	248.9	25.3	63@2800	G	Own	Own	Spic	Gem	Str	Vac	NE	Own	4	Tim	Sp	Opt	L4IH	302	148	——	20x6.00B	20x6.00DB
††Mack B G	——	3000	Own	L	6	3 3/8x5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Sp	Opt	O4IV	415	156	——	32x6	32x6D
††Mack A B	——	4350	Own	L	4	4 1/4x5	283.7	28.9	60@2200	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2 R	Opt	O4IV	471	146½	——	34x7	34x7D
Mack A B	——	4000	Own	L	4	4 1/4x5	283.7	28.9	60@2200	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	471	146½	——	34x7	34x7D
Mack A B	——	4500	Own	L	6	3 3/8x5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2 R	Opt	O4IV	471	146½	——	34x7	34x7D
††Mack A B	——	4150	Own	L	6	3 3/8x5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	471	146½	——	34x7	34x7D
††Mack B C	——	5250	Own	L	6	4 x5 1/2	417.7	38.4	100@2300	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	2 R	Opt	O4IV	610	154	——	36x8	36x8D
††Mack B C	——	5500	Own	L	6	4 x5 1/2	417.7	38.4	100@2300	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	610	154	——	36x8	36x8D
††Mack B J	——	6150	Own	L	6	4 1/2x5 1/2	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	2 R	Opt	O4IV	567	168½	——	36x8	36x8D
††Mack A K	——	5150	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	O4IV	492	162	——	36x5S	36x5DS
††Mack A K	——	5250	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	2 R	Opt	O4IV	492	162	——	36x5S	36x5DS
††Mack A C	——	4950	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	156	——	36x5S	40x5DS
††Mack A K	——	6450	Own	L	6	4 1/2x5 1/2	525.5	48.6	126@2200	G	Own	Own	Spic	Han	Str	Vac	L-N	Own	4	Own	2 R	Opt	O4IV	492	174	——	22x10.50B	22x10.50DS
††Mack A C	——	5500	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	156	——	36x6S	40x6DS
††Mack A C	——	6550	Own	L	6	4 1/2x5 1/2	525.5	48.6	126@2200	G	Own	Own	Spic	Han	Str	Vac	L-N	Own	4	Own	Ch	Opt	O4IV	492	174	——	24x10.50B	24x10.50DB
††Mack A C	——	6000	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	156	——	36x7S	40x7DS
††Mack A P	——	9500	Own	L	6	5 x6	706.5	60.0	150@2000	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Cn	Opt	O2IV	287	191	——	36x7S	40x8DS
††Mack A K 6—6 wheel	——	9500	Own	L	6	4 1/2x5 1/2	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	2 R	Opt	O6IA	574	152-52	——	9.75x22B	9.75x22DB
††Mack A C 6 wheel	——	7650	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	ORIV	574	125-52	——	36x6S	40x12S
††Mack A C 6—6 wheel	——	9000	Own	L	6	4 1/2x5 1/2	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	Ch	Opt	O6IA	574	145-52	——	40x8	40x8D
††Mack A P 6 wheel	——	11500	Own	L	6	5 x6	706.5	60.0	150@2000	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	O6IA	574	145-52	——	40x8	40x8D
††Mack A P 6 wheel	——	12000	Own	L	6	5 x6	706.5	60.0	150@2000	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2 R	Opt	O6IA	574	145-52	——	22x9.75B	22x9.75B
Paige	½	*895	Own	L	6	3 1/16x4 1/2	207.0	23.4	66@3200	C	Long	Long	Un	Ross	DL	I	DR	—	3	——	Sp	14.2	4IH	264	115	2350	16x5.50B	16x5.50B
Pierce-Arrow P T	12000	2950	Own	L	6	3 3/4x4 1/2	298.0	33.5	70@2600	G	Long	Long	Cle	Han	Zen	P	DR	Cla	4	Tim	Sp	——	B4IMV	388	160	5600	20x7.50B	20x7.50B
Pierce-Arrow P W	18000	4150	Own	L	6	4 1/8x4 1/2	361.0	40.3	77@2400	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	*Wo	——	W4IA	488	156	6660	20x9.00B	20x9.00B
Pierce-Arrow P X	24000	5375	Own	L	6	4 5/8x4 3/4	479.0	51.3	103@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	——	W4IA	610	160	9300	20x10.50B	20x10.50B
Pierce-Arrow P Y	28000	5950	Own	L	6	4 5/8x4 3/4	479.0	51.3	103@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Own	*Wo	——	W4IA	701	160	10675	24x10.50B	24x10.50B
Pierce-Arrow P Z	34000	6950	Own	L	6	4 3/4x5 3/4	611.0	54.1	130@2000	G	Long	Long	Cle	Han	Zen	P	DR	Own	4	Own	*Wo	——	W4IA	702	168	12800	36x7B	40x16B
Relay Series 15 AA	¾	1370	Con	L	6	3 3/8x4	214.7	27.3	52@2200	C	Long	Borg	Blo	Han	Str	Vac	Aut	W-G	4	Own	2R	38.4	L4IH	297	131	3750	30x5P	30x5P
Relay Series 15 AB	1	1400	Con	L	6	3 3/8x4	214.7	27.3	52@2200	C	Long	Borg	Blo	Han	Str	Vac	Aut	W-G	4	Own	2R	38.4	L4IH	297	131	3800	30x5P	30x5P
Relay Series S 11	1	1700	Bud	L	6	3 3/8x4 1/2	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	25.5	L4IH	297	142	4050	30x5P	30x5P
Relay Series S 11	1½	1900	Bud	L	6	3 3/8x4 1/2	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	30.0	L4IH	297	162	4500	30x5P	30x5DP
Relay Series 40	1½	2990	Bud	L	6	3 3/8x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	34.5	L4IH	394	168	5300	34x5P	34x5DP
Relay Series 40	2	3240	Bud	L	6	3 3/8x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	34.5	L4IH	394	168	5500	36x6	36x6D
Relay Series 50	2	3860	Bud	L	6	3 3/4x5	331.0	33.7	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	5	Own	2R	58.5	L4IH	584	161	6800	36x6	36x6D
Relay Series S 11	2	2630	Bud	L	6	3 3/4x4 1/2	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	30.0	L4IH	297	162	4760	32x6P	32x6DP
Relay Series 40	2½	3275	Bud	L	6	3 3/8x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Own	2R	34.5	L4IH	394	168	5700	36x6	36x6D
Relay Series 50	2½	4000	Bud	L	6	3 3/4x5	331.0	33.7	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	5	Own	2R	58.5	L4IH	584	161	7000	36x6	36x6D
Relay Series 60	2½	4555	Bud	L	6	4 1/8x5 1/8	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Own	2R	58.5	L4IH	584	175	7350	36x6	36x6D
Relay Series 50	3	4130	Bud	L	6	3 3/4x5	330.0	33.7	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	5	Own	2R	58.5	L4IH	584	161	7200	36x6	40x8D
Relay Series 60	3	4595	Bud	L	6	4 1/8x5 1/8	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Own	2R	58.5	L4IH	584	175	7500	36x6	38x7D
Relay Series 80	3	5170	Bud	L	6	4 1/8x5 1/8	411.0	40.8	83@2100	G	Long	Borg	Blo	Ross	Zen	Vac	Aut	Cov	8	Own	2R	84.1	——	—	175	8400	36x6	40x10S
Relay Series 60	3½	4745	Bud	L	6	4 1/8x5 1/8	411.0	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Own	2R	58.5	L4IH	584	175	7800	38x7	40x4D
Relay Series 80	3½	5330	Bud	L	6	4 1/8x5 1/8	411.0	40.8	83@2100	G	Long	Borg	Blo	Ross	Zen	Vac	Aut	Cov	8	Own	2R	84.1	——	—	175	8800	36x6	40x12S
Relay Series 80	4	5380

Major Specifications and Mechanical Details of 1931 Commercial Cars

(CONTINUED FROM PAGE NINE)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Transmission Make	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Wgt.	Standard Tire Sizes Front	Rear
Selden 67 C	6	4975	Con	H	6	4⅜x4¾	427.0	45.9	100@2400	C	Own	Br-L	Spic	Ross	Str	Vac	Aut	Br-L	7	Wis	2R	——	L4IHVA	—	171	8700	36x8	36x8D
Selden 77	7	7165	Con	L	6	4¾x5¾	611.0	54.1	127@2300	G	Own	Br-L	Spic	Ross	Str	Vac	Aut	Br-L	7	Wis	2R	——	BW4IM	—	178	11600	40x8	42x9D
Service Series S 11	1	1600	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Col	Sp	25.5	——	—	142	3900	30x5P	30x5P
Service Series S 11	1½	1900	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4300	30x5P	30x5DP
Service Series 40	1½	2990	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4700	34x5P	34x5DP
Service Series S 11	2	2030	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4500	32x6	32x6D
Service Series 40	2	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4900	36x6	36x6D
Service Series 40	2½	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	5100	36x6P	36x6D
Service Series 60	2½	4580	Bud	L	6	4⅛x5⅛	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7000	36x6	36x6D
Service Series 60	3	4580	Bud	L	6	4⅛x5⅛	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	——	—	175	7100	36x6	38x7D
Service Series 80	3½	5250	Bud	L	6	4⅛x5⅛	411.0	40.8	83@2100	G	Long	Borg	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8200	36x6S	36x12S
Service Series 80	4	5330	Bud	L	6	4⅛x5⅛	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8400	36x6S	36x14S
Service Series 100	6	5830	Bud	L	6	4⅛x5⅛	410.9	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	95.0	——	—	175	9600	36x6S	40x14S
Sewart 30	1	695	Lyc	L	4	3¾x4½	199.0	22.5	50@2600	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	..	130	3158	20x6.50	20x6.50
Sewart 30X	1	795	Lyc	L	6	3 x4¾	185.0	23.8	60@2800	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	..	130	3199	20x6.50	20x6.50
Stewart 40	1½	895	Lyc	L	4	3¾x4½	199.0	22.5	50@2600	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Cla	Sp	35.1	B4IM	..	130	3531	20x6.50	20x6.50D
Stewart 40 X	1½	995	Lyc	L	6	3 x4½	201.5	23.8	60@3800	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	..	130	3574	20x6.50	20x6.50D
Stewart 34 X	1½	1195	Lyc	L	6	3¼x4½	224.0	25.3	61@2600	G	Own	Borg	Spic	Ross	Str	P	DR	W-G	4	Cla	Sp	35.1	B4IM	..	145	3891	20x6.50	20x6.50D
Stewart 28 X	2	1495	Lyc	L	6	3¼x4½	224.0	25.3	61@2600	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	44.1	B4IM	..	136	4239	20x6.50	20x6.50D
Stewart 29 X S	2	1695	Lyc	L	6	3⅝x4½	278.0	25.3	85@2750	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	44.1	B4IM	..	145	5194	32x6	32x6D
*Stewart 18 X	2½	2690	Lyc	L	6	3⅞x5	310.0	31.5	85@2750	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Tim	Wo	48.1	B4IM	..	165	6245	32x6	32x6D
Stewart 32 X	2½	1990	Lyc	L	6	3⅝x4½	278.0	31.5	80@2500	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	46.1	B4IM	..	165	6552	32x6	32x6D
Stewart 35 X	3	2590	Lyc	L	6	3¾x4½	299.0	33.8	85@2750	G	Fed	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	46.1	B4IM	..	165	6924	20x8.25B	20x8.25D
Stewart 36 X	3	2990	Lyc	L	6	3⅞x5	354.0	36.2	90@2750	G	Fed	Borg	Spic	Ross	Str	P	DR	Br-L	4	Tim	Wo	105.1	B4IM	..	165	6864	20x8.25	20x8.25D
Stewart 19 X	3½	3690	Lyc	L	6	3⅞x5	354.0	36.2	90@2750	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	12	Tim	Wo	105.1	B4IM	..	165	7474	34x7	34.7D
Stewart 38-8	3½	3990	Lyc	L	8	3¾x4¾	462.0	44.4	130@2800	G	Fed	Borg	Spic	Ross	Str	P	DR	Br-L	12	Tim	2R	105.1	B4IMV	..	170	7964	20x9.00	20x9.00D
Stewart 38-6	3½	3990	Wak	L	6	4⅜x5⅛	420.0	45.9	100@2000	G	Fed	Borg	Spic	Ross	Str	P	DR	Br-L	12	Tim	2R	105.1	B4IMV	..	170	7964	20x9.00	20x9.00D
Stewart 31 X	5	4990	Wak	L	6	4⅜x5⅛	462.0	45.9	100@2000	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	8	Tim	Wo	105.1	B4IMV	—	165	9885	36x6S	36x6SD
Stewart 27 X	7	5700	Wak	L	6	4⅜x5⅛	462.0	45.9	100@2000	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	8	Tim	Wo	105.1	B4IMV	—	165	10512	36x7	40x7D
Studebaker S-1	½	595	Own	L	6	3⅜x4⅛	221.0	27.3	70@3200	C	McC	Long	Spic	Ross	Str	P	DR	W-G	3	Own	Sp	16.4	B4IM	148	114	2897	19x5.25	19x5.25
Studebaker S-20	1½	695	Own	L	6	3¼x4⅛	205.0	25.4	70@3200	C	McC	Long	Spic	Ross	Str	P	DR	W-G	4	Tim	Sp	36.2	B4IM	224	130	2990	20x6.00	32x6
Studebaker S-30	1½	775	Own	L	6	3¼x4⅛	205.0	25.4	70@3200	C	McC	Long	Spic	Ross	Str	P	DR	W-G	4	Tim	Sp	36.2	B4IM	224	160	3145	20x6.00	32x6
Studebaker S-40	2	945	Own	L	6	3¼x4⅛	205.0	25.4	70@3200	C	McC	Long	Cle	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	136	3775	20x6.50	20x6.50D
Studebaker S-50	2	895	Own	L	6	3¼x4⅛	205.0	25.4	70@3200	C	McC	Long	Cle	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	148	3805	20x6.50	20x6.50D
Studebaker S-60	2	945	Own	L	6	3¼x4⅛	205.0	25.4	70@3200	C	McC	Long	Cle	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	160	3860	20x6.50	20x6.50D
Studebaker 88	——	3295	Own	L	8	3½x4⅜	327.0	39.2	115@3200	G	Long	Long	Spic	Ross	Str	P	DR	Ful	4	Eat	Sp	24.6	B4IMV	444	184	5413	20x7.50	20x7.50D
Studebaker 99	——	3795	Own	L	8	3½x4⅜	337.0	39.2	115@3200	G	Long	Long	Spic	Ross	Str	P	DR	Ful	4	Eat	Sp	24.6	B4IMV	505	184	5680	20x7.50	20x7.50D
White 15B	*7,500	1545	Own	L	4	3¾x5⅛	226.4	22.5	31@1600	G	Own	Own	Spic	Own	Zen	Vac	L-N	Own	4	Own	Sp	18.6	O2XM	226	133½	3402	30x5	30x5
White 160	*8,000	1700	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4625	30x5	30x5
White 60	*8,000	1850	Own	L	6	3½x4½	260.0	29.4	54@2100	C	Own	Own	Mec	Han	Zen	Vac	DR	Own	3	Own	Sp	17.8	L4IH	276	138	3739	30x5	30x5D
White 161	*9,000	1850	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4290	34x7	34x7
White 162	*10,000	1900	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4760	30x5	30x5D
White 210	*10,000	2300	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4875	30x5	30x5D
White 61	*10,500	2450	Own	L	6	3¾x4½	299.0	33.7	61@2100	C	Own	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4789	30x5	30x5D
White 611	*11,500	2550	Own	L	6	3¾x4½	299.0	33.7	61@2100	C	—	Own	—	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4980	20x7.00B	20x7.00DB
White 211	*11,500	2425	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5110	32x6	32x6D
White 212	*13,000	2700	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5230	34x7	34x7D
White 56	*13,000	3125	Own	L	4	4 x5¾	289.0	25.6	45@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	26.2	O2IM	268	165	5276	36x4	36x7
White 612	*13,000	2800	Own	L	6	3¾x4½	299.0	33.7	61@2100	C	—	Own	—	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5100	20x7.50B	20x7.50DB
White 620	*15,000	4350	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.8	O1.4IHV	—	157	7300	20x8.25B	20x8.25DB
White 51A	*17,000	3750	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	55.6	O2IM	335	170	6438	36x5	36x8
White 51AT	*17,000	3875	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	46.6	O2IM	335	134	6227	36x5	36x8
White 621	*18,000	4650	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	O1.4IHV	—	157	7700	20x9.00B	20x9.00DB
White 640	*20,000	6100	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	Sp	33.9	O4IA	—	180	9200	20x9.00B	20x9.00DB
White 630	*20,000	5000	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	—	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	O4IHV	554	168	8500	20x9.00B	20x9.00DB
White 55	*21,500	4650	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	66.1	OPXM	224	174	8737	36x5	40x5D
White 58	*22,000	4400	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	49.7	OPXM	224	180	7797	36x5	36x5D
White 611	*24,000	6450	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	—	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	46.9	O4IA	—	180	9700	20.9.75B	20x9.75DB
*White 630 SW200	*24,000	6280	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	—	Own	Spic	Ross	Zen	P	DR	Own	4	Tim	Wo	44.2	OT1HV	—	193	10000	20x8.25B	20x8.25DB
White 631	*24,000	5750	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	2R	56.9	O4IHV	—	168	9000	20x9.25B	20x9.25DB
White 52	*28,000	5100	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	53.4	OPXM	224	174	9409	36x6	40x12
White 52T	*28,000	4700	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	76.5	OPXM	224	129½	8461	36x5	40x5D
White 643	*32,000	6950	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	66.5	O4IA	—	180	10900	24x10.50B	24x10.50DB
*White 642 SW310	*34,000	8045	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	—	Own	Spic	Ross	Zen	P	L-N	Own	4	Tim	Wo	58.6	OT1HV	—	198	12670	20x9.00B	20.9.00DB
White 642	*34,000	6750	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	66.5	O4IA	—	180	10600	24x9.75B	24x9.75DB
*White 643 SW410	*40,000	8570	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	—	Own	Spic	Ross	Zen	P	L-N	Own	4	Tim	Wo	69.9	OT1HV	—	198	14400	40x8	40x8D
**White 60K	——	2200	Own	L	6	3½x4½	260.0	29.4	54@2100	C	—	Own	Mec	Han	Zen	Vac	DR	Own	3	Own	Sp	17.6	L4IH	276	112	3200	20x7.00B	20x7.00B
White 601	——	1900	Own	L	6	3½x4½	260.0	29.4	54@2100	C	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	3825	20x7.00B	20x7.00B
White 602	——	2050	Own	L	6	3½x4½	260.0	29.4	50@1800	C	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4125	20x7.50B	20x7.50B
Willys 6-C-113	½	395	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	Own	3	Own	Sp	12.4	B4IM	143	113	1923	19x5.00	19x5.00
Willys 6-C-131	1½	595	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	W-G	4	Cla	Sp	40.8	B4IM	235	131	2625	20x5.50	32x6
Willys 6-C-157	1½	630	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	W-G	4	Cla	Sp	40.8	B4IM	235	157	2900	20x5.50	32x6

GENERAL NOTATIONS

*REFERENCE MARKS apply to individual lines only and explanations are given under the subdivision for each company in the "SPECIAL NOTATIONS."

CAPACITIES given in this table are in tons or fractions of tons. *Shows maximum allowable gross weight in pounds.

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

CHASSIS WEIGHT—Unless otherwise specified includes gas, water, oil, etc.

ENGINE—Bud, Buda: Con, Continental; Her, Hercules; Lyc, Lycoming; Pont, Pontiac; Wak, Waukesha; Wis, Wisconsin; Hall, American Car & Foundry.

VALVE ARRANGEMENT—L, "L" head; H, in head; O, overhead; T, T head; S, sleeve.

TYPE OF CAMSHAFT DRIVE—G, gear; C, chain.

RADIATOR MAKE—G & O, G & O Mfg. Co.; Per, Perfex Corp.; Long, Long Mfg. Co.; Har, Harrison Radiator Corp.; Fed, Fedders Mfg Co.; McC, McCord Radiator & Mfg. Co.; Mod, Modine Mfg. Co.; Hex, Hexcel Radiator Co.

CLUTCH MAKE—Jon, Jones Clutch & Gear Co.; Ful, Fuller & Sons Mfg. Co.; Borg, Borg & Beck Co.; Br-L, Brown Lipe Gear Co.; Rock, Rockford Drill & Machine Co.; Cov, Covert Gear Co.; Long, Long Mfg. Co.; Detr, Detroit Gear & Machine Co.; Mer, Merchant & Evans; Hel, Merchants & Evans.

UNIVERSALS MAKE—Spic, Spicer Mfg. Co.; Blo, Blood Bros. Machine Co.; Sup, Superior Universal Products; Un, Universal Products Co.; Cle, Cleveland Steel Products Corp.; Pet, Peters; Opt, optional; Mec, Mechanics Machine Co.

STEERING GEAR MAKE—Ross, Ross Gear & Tool Co.; Han, Hannum Mfg. Co.; Sag, Saginaw Steering Gear Co.; Gem, Gemmer Mfg. Co.; Col, Columbus Gear & Pump Co.; W-G, Warner Gear Corp.

CARBURETOR—Car, Carter; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUEL FEED—Gra, gravity; Vac, vacuum tank; P, fuel pump.

ELECTRICAL SYSTEM—AB, American-Bosch; Aut, Electric Auto-Lite; Eis, Eisemann; L-N, Leece-Neville; NE, North East; RB, Robert Bosch; DR, Delco-Remy.

TRANSMISSION—Br-L, Brown-Lipe; Cov, Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G, Warner Gear; Cot, Cotta Gear Co.; Cla, Clark Equipment Co.

REAR AXLE, Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Pont, Pontiac; Sal, Salisbury; Tim, Timken; Wis, Wisconsin.

FINAL DRIVE—IG, internal gear; St, straight bevel; Sp, spiral bevel; Wo, worm; 2R, double reduction; Ch, chain; S-T, semi-transverse.

TIRES—B, balloon; D, dual; S, solid; P, pneumatic.

TYPE OF SERVICE BRAKES—B4IM, Bendix, 4 wheel, internal mechanical; B6IA, Bendix, 6 wheel, internal air; B4IMV, Bendix, 4 wheel, internal mechanical, vacuum; BrIA, Bendix, operating on 4 rear wheels, internal air; BW4IM, Bendix front, Wisconsin rear, 4 wheel internal, mechanical; BE4IM, Bendix front, Eaton rear, 4 wheel, internal mechanical; BO4IM, Bendix front, own rear, 4 wheel internal mechanical: B4IH, Bendix, 4 wheel, internal hydraulic; B4, Bendix, 4 wheel.

C4IM, Columbia, 4 wheel, internal, mechanical; K2IM, Clark, 2 wheel, internal, mechanical.

L4IHVA, Lockheed, 4 wheel, internal, hydraulic, vacuum, air; LO4ID, Lockheed, own, 4 wheel, internal, drive shaft; LO4IV, Lockheed, own, 4 wheel, internal, vacuum; LT4DV, Lockheed Timkin, 4 wheel, drive shaft, vacuum; L4IH, Lockheed, 4 wheel, internal, hydraulic; L4IHV, Lockheed, 4 wheel, internal hydraulic, vacuum; LT4IVA, Lockheed, Timken, 4 wheel, internal, vacuum, air; L6IHV, Lockheed, 6 wheel, internal, hydraulic, vacuum; L6IH, Lockheed 6 wheel, internal, hydraulic.

O2IM, Own, 2 wheel, internal, mechanical; O2IV, Own, 2 wheel, internal, vacuum; O4IA, Own, 4 wheel, internal, air; O4IM, Own, 4 wheel, internal, mechanical; O4IV, Own, 4 wheel, internal, vacuum; O4M, Own, 4 wheel, mechanical; O2XM, Own, 2 wheel, external, mechanical; O4XM, Own, 4 wheel, external, mechanical; OJXM, Own, jack shaft, external, mechanical; OL4IH, Own, Lockheed, 4 wheel, internal, hydraulic; OPX, Own, propeller shaft, external; OPXM, Own, propeller shaft, external, mechanical; OPM, Own, propeller shaft, mechanical; ORIV, Own, rear wheels, internal, vacuum.

S4IM, Steeldraulic, 4 wheel, internal, mechanical.

T4rIA, Timken, operating on 4 rear wheels, internal, air; T4IA, Timken, 4 wheel, internal, air; T6IA, Timken, 6 wheel, internal, air; T2IMV, Timken, 2 wheel, internal, mechanical, vacuum.

W4I, Westinghouse, 4 wheel, internal; W4IA, Westinghouse, 4 wheel, internal, air. W6IA, Westinghouse 6 wheel, internal, air. 4IA, 4 wheel, internal, air; 4IH, 4 wheel, internal, hydraulic; 4M, 4 wheel, mechanical.

SPECIAL NOTATIONS

AMERICAN-LA FRANCE

*Chief model also available as 2½-ton model, 34x7 tire, dual rear; weight, 6,400. Price, $3,900.

Chieftain model also available as dump truck, 160-inch wheel base.

Balloon tires optional on Chief, Chieftain and Big Chief models.

AUTOCAR

*Engines in these models are located under the driver's seat.

BROCKWAY

*Six-wheelers.

CHEVROLET

Utility model available on 131-inch wheel base with chassis weight of 2,760 pounds and equipped with dual rear wheels.

DAY ELDER

*Six-wheeler.

Additional standard wheel bases are available on different models as follows:

85.....146, 168 240.....204
110.....168, 186 285.....204
130.....163, 187, 193 345.....204
160.....165, 180, 204 402.....204

DODGE

*Models F40, F41, F61 and F62 can be had with double drop frame.

DIAMOND T

*Six-wheelers.

Additional standard wheel bases available as follows:

551.....138 750.....167, 192
504.....166½ 801.....180½, 199¼
506.....174 1200.....174½, 180
603.....157, 179 1600.....174½, 180
606.....177½ 1601.....184

F. W. D.

*Indicates six-wheel model.

The BTL and BT models are special line construction trucks in which complete provision for mounting AT and T° earth boring machine, winch, body and other line construction accessories is included in the standard chassis.

Special power take-off transmission, which provides 3 power take-offs which may be operated in any transmission speed, optional on all models.

FEDERAL

*Six-wheelers.

†Solid tires standard, no spare rim or tire.

FORD

Chassis weight given does not include gas, water, oil, etc.

GRAMM

Series	Straight Rating	Wheel Base	Pay Load Range
AX 4	8,000	157	1 to 1½ tons
AX 6	8,000	157	1 to 1½ tons
BX 4	10,000	157	1½ to 2 tons
BX 6	10,000	157	1½ to 2 tons
CX 4	12,000	157-180	2 to 3 tons
CX 6	12,000	157-180	2 to 3 tons
B	12,000	157-174	1¾ to 2½ tons
C	14,000	145-198	2 to 3 tons
D	17,000	145-196	2½ to 4 tons
E	20,000	145-196	3 to 4½ tons
EY			3 to 4 tons
GY			4 to 5 tons
GW	28,000	157-240	5 to 7½ tons
HY			5 to 6½ tons

†Both the four and six cylinder are also offered in 157-inch wheel base at $1,145 and $1,345, respectively.

GENERAL MOTORS TRUCK

*Capacity indicated is the Straight Rating (combined weight of chassis, body, equipment and pay load) for which each chassis is designed and guaranteed to satisfactorily operate under average conditions. The size of the tires used does not affect this Straight Rating, but to secure maximum tire mileage it is suggested that the total gross weight be limited to a "recommended gross weight" for each tire equipment based on tire capacity. Prices cover base chassis and vary with wheel base and tire combinations. The number of wheel base lengths, tire types, range of "recommended gross weights" and resulting pay load range (assuming nominal body allowance) for each model follows:

Note: Models T-15 to T-60, inclusive, are available for export only as coach chassis.

Model	Wheel Bases	Tire Types	Range of Rec. Gross Weights	Pay Load Range
T-11	1	1	3800	½
T-15	3	10	4500- 6500	½-1½
T-17	2	8	5500- 6500	1-1½
T-19	3	22	6500- 8500	1½-2
T-25	3	17	6800- 9000	1½-2
T-26	4	..	8500-11000	2-3
T-30	3	15	10000-12500	2-3
T-31	4	..	11000-14000	2½-4
T-42	4	12	12000-15000	2½-4
T-44	4	12	12000-16000	3-4½
T-51	4	..	16500-19000	4-5½
T-55	4	..	16500-19000	4-5½
T-60	4	18	18500-22000	5-6½
T-61	4	..	19500-22000	5-6½
T-82	4	12	19000-24000	5-7
T-83	4	..	20000-24000	5-7
T-85	3	..	22000-26000	5-7
T-90	3	7	22000-28000	5-7½
T-95	3	..	28000-34000	7-9
T-96	3	..	28000-34000	7-9

†Models T-90, T-95 and T-96 are six-wheelers, the latter having one driven and one trailing axle. Optional rear axle gear ratios available for all models. Double reduction axles available for Models T-60, T-61 and T-82.

INDIANA

*Six-wheelers.

MACK

Other wheel bases furnished on all truck models.

On 6-wheel jobs 4 rear wheels driven by chains, foot brake on 4 rear wheels.

††Made also in tractor models.

PAIGE

*Price includes panel or screen body. Chassis weight given does not include gas, water, etc.

PIERCE-ARROW

*Optional final drive on Models PW, FX, PY and PZ.

REO

Models DF 129, DF, FA, FE and FF are available with duel wheels at additional cost.

*Models DF129 and DF 135 can be had with either 3 or 4 speed transmission.

SELDEN

Additional standard wheel bases are available on different models as follows:

Model 37C..... 162 and 181
39C..... 177 and 190½
47CB, 47CD.. 151, 164 and 184
67C.....151, 164, 184 and 198

STEWART

Models 30 and 30X can also be supplied in 110, 120, 140 and 160-inch wheel base.

Models 40 and 40X can also be supplied in 110, 140 and 160-inch wheel base.

*Models 34X can be supplied in 135, 145, 160 and 176-inch wheel base.

Model 28X can be supplied in 130, 145, 160 and 176-inch wheel base.

Model 29XS can be supplied in 135, 160 and 176-inch wheel base.

*Models 18X, 32X and 36X can be supplied in 148, 190 and 220-inch wheel base.

*Models 19X, 31X and 27X can be supplied in 148, 172, 190, 220 and 235-inch wheel base.

As optional equipment Models 18X, 19X, 36X, 31X and 27X can be supplied with Timken dual reduction rear axle.

Models 38-8 and 38-6 can be supplied in 150, 160, 170, 196, 226 and 241-inch wheel base and worm axle.

STUDEBAKER

Maximum gross load, chassis, body and pay load for Model 88 to 12,500 pounds and for Model 99 is 14,000 pounds.

‡Hand brake same as foot brake, standard. Hand brake on drive shaft, special equipment.

WHITE

*Six-wheelers.

**Price on Model 60K includes body.

RUSCO APPOINTS NEW SPRINGFIELD STATION

Springfield, Mass., July 16.—The Russell Manufacturing Company, Middletown, Conn., maker of Rusco brake linings and other automotive fabric products, announces the appointment of the Standard Tire Sales Company, Inc., Franklin and Chestnut Streets, here, as an authorized Rusco brake service station. The Standard concern is a distributor of Goodrich Silvertown tires and has put in complete brake service equipment, purchased through Rusco, and including a Cowdrey brake testing machine and a Musgrave brake lining grinder.

The Manhattan Auto Parts and Machine Shop, Inc., 645 1st Ave., New York, has been appointed a jobber on the complete Rusco line.

Rusco has also appointed the following distributors: Illinois Battery and

New Highway Legislation By States for 1931

(Continued from Page 8)

to the abutting property. The Legislature has provided that this money shall be returned, with interest, since the state has taken this system of roads over under state obligation for construction. For several years therefore, the funds for new road construction will be decreased by probably $1,300,000 per year until these benefit district assessments have been paid off.

The State Highway Commission was also empowered to assist cities of the third class in paying for right of way for streets which have been designated by the Highway Commission as connecting links in the state system.

The Highway Commission is given power and authority to either close highways or limit the weight and speed of vehicles on such highways when they are in unsafe condition for travel.

Maximum speed of buses was placed at forty-five miles per hour. The limit of thirty miles per hour was made for vehicles, the gross weight of which exceeds 7,000 pounds.

The length of single vehicles was increased from 33 to 35 feet and combinations were reduced from 60 to 50 feet. The gross weight of a single unit of four wheels was left at 24,000 pounds, and six wheels at 34,000, single axle restrictions at 16,000 pounds, but provision was made whereby a single axle load may be as great as 18,600 pounds when dual tires are used.

After July 1, 1931, all trucks, trailers and semi-trailers shall be equipped with pneumatic tires. No vehicle is permitted to be loaded in excess of 200 per cent. of its rated capacity.

LOUISIANA

The recent session of the Louisiana Legislature, which was an extra session, definitely set aside 2 cents of the gasoline tax towards funding bonds for the construction of roads.

The last Legislature authorized a $75,000,000 bond issue for roads, and this special session provided for the details of the issuing thereof.

The state highway mileage was increased by approximately 1,000 consisting mostly of county roads.

MAINE

The Legislature of Maine created a general highway fund act placing all of the income from gasoline tax, automobile license fees, mill tax highway fund, and direct appropriation, in this fund and then apportioned fixed amounts to the various activities of the State Highway Department, with the exception of the construction of roads and bridges from bond issues.

The gasoline tax was increased from 4 to 5 cents, 50 per cent. going for maintenance of state and state aid highways and bridges, 12 per cent. for third class highways, and 5 per cent. for R. F. D. roads and 32½ per cent for state aid highway construction. It is believed, however, that since the general highway fund act was passed subsequently to this act that these percentages will not apply.

For trucks having a rated capacity of 1,000 pounds or less, to a capacity of five tons, the license fees start at $10 and go to $150. Should these vehicles have solid tires, the license is increased 33 1-3 per cent.

Motor trucks from other states or foreign countries shall pay double the fee paid for Maine residents. Heretofore, court fines collected by highway police were credited to the state maintenance account; hereafter they will be divided equally between the state and county where the case was tried.

MARYLAND

The Maryland Legislature passed a law providing that the use of any public highway in Maryland by a non-resident owner or operator of a motor vehicle shall be deemed as an appointment of the secretary of state as his attorney and lawful process arising out of any accident may be secured by this method.

The Legislature passed a law changing the present methods of apportioning motor license fees and a gasoline tax. Heretofore any unappropriated portion of these funds by the Legislature to definite projects reverted to the general fund of the state, now any unused portions are left for subsequent legislative action for road purposes.

MASSACHUSETTS

The Legislature of Massachusetts has made temporary changes in order to permit an increased road program for 1931. Due to this additional program, gasoline tax for two years is provided, making the total tax 3 cents per gallon. However, this additional 1 cent tax is distributed to cities and towns exclusively. Temporary notes were provided covering a period of two years.

Prima facie speed was increased from twenty to thirty miles per hour.

MICHIGAN

Probably one of the outstanding laws passed by the Michigan Legislature showing the drift of sentiment towards a more definite and centralized responsibility, was the bill providing that the counties must take over all of the township roads in the state. This is not done at one time, but they are to be taken over one-fifth a year for five years. Provision is made in this law for the State Highway Department to assist the counties, beginning with $2,000,000 for the first year and gradually increased until at five years the amount of assistance will reach $4,000,000.

Another law of importance in the general plan is the requirement of the State Highway Commission to provide funds for the cost of maintaining and improving trunk line highways and bridges within municipalities. This is on a graduated scale, according to the population of the cities.

MINNESOTA

The most important legislation affecting the Highway Department of Minnesota was the passage of a bill authorizing issuance of $15,414,000 in trunk highway bonds, to augment construction fund in 1931 and 1932. The reason for the odd figure is a constitutional limitation of $10,000,000 in the bonds which may be issued in any one year, and a previous authorization of $4,585,000 refunding bonds which will be issued during the biennium. With bond proceeds added to current income, the State Highway Department expects to pave 823 miles and grade 1,258 miles in the next two years, putting the grading program ahead so that from and after 1933 the department will be able to pave 350 to 400 miles annually with current income.

Maximum weights of vehicles were increased to 9,000 pounds on any wheel, or 18,000 pounds per axle, on vehicles equipped with pneumatic tires and having axles spaced eight feet apart. When spaced less than eight feet apart, the maximum per axle is 12,000 pounds. Greater weights, up to 22,400 pounds per axle on vehicles equipped with pneumatic tires and axles spaced eight feet apart, will be permitted on roads designated as "industrial roads."

The maximum loads on vehicles with solid tires are 80 per cent. of the loads permitted on vehicles equipped with pneumatics.

MISSOURI

In connection with legislation in Missouri it should be noted that constant contentions for changes in gasoline tax and motor license fees or suggestions of changes for distribution of these funds can not be changed until 1938. Receipts from these two sources can be expended only for the maintenance of the State Highway Department and for the construction and maintenance of roads on the state highway system and for the support of state highway patrol.

A bill was passed creating an additional revenue by the imposition of taxes on common carriers of passengers and freight. This fund must be expended exclusively for maintenance.

MONTANA

The Montana Legislature continued the five-cent gasoline tax until 1941, when it is to return to three cents. The collection of motor license fees was changed to the county treasurers instead of the state registrar.

The Legislature referred to a general vote of the people a proposition to issue gasoline tax anticipation debentures to the amount of $1,500,000 a year up to $6,000,000. At a special election on May 5, by a majority of three to one, this measure was approved by the people.

NEBRASKA

The session of the Legislature of Nebraska for this year enacted very little legislation concerning the state highway problem. A change was made in the motor license fees for commercial trucks, and also the speed limit was changed. Slight changes were made in the weight and dimensions of trucks, limiting the gross load to 16,000 pounds on any one axle, the width to eight feet and height to twelve feet.

NEVADA

The state Legislature of Nevada authorized a bond issue of $600,000 to construct sections of the state highway system that cannot receive Federal aid.

The speed limit of fifty miles per hour was removed and a licensing of drivers law was passed.

Thirty-seven miles were added to the state system.

A contractors' prequalification and license law was passed carrying a fee of $200 for the first year and $100 per year thereafter.

NEW HAMPSHIRE

The Legislature of New Hampshire made a small change in the allotment of the gasoline road toll in that an increased amount is permitted to be paid back to the towns for maintenance of Class V roads.

The Highway Department was given authority to build a toll bridge across Great Bay at a cost not to exceed $1,250,000. The bonds are to be paid by tolls for the use of the bridge.

NEW JERSEY

The New Jersey Legislature increased the gasoline tax from 2 to 3 cents and in the distribution of this tax designated $5,000,000 to go to municipalities and also the interest on a $100,000,000 bond issue is to be taken from the gasoline tax. A bond issue of $18,000,000 is made available for the year 1931-32.

The urchases for the State Highway Department will hereafter be made through a general state purchasing office.

NEW MEXICO

The Legislature of New Mexico changed the law creating the Highway Commission by changing the number of commissioners from three to five members. These members are appointed from districts. The commission is bi-partisan in character, not more than three members coming from the same political party. The terms of office are six years, two retiring every two years.

A law was passed authorizing the Highway Commission to anticipate the proceeds of gasoline tax and motor vehicle fees by the issuance and sale of debentures not to exceed $2,000,000 and interest not to exceed 6 per cent.

NEW YORK

The New York Legislature is required each year to appropriate definite sums for highway work and this winter was very generous in its appropriations, in fact increased the amount, due to unemployment.

Besides this, the Legislature passed very few amendments to the highway law, and it is believed that this was due to the fact that the people are well satisfied with the present method of operating the Highway Department.

NORTH CAROLINA

The state Legislature of North Carolina has changed the method of organization of the Highway Commission, and in the future it will consist of a chairman and six commissioners. The state highway funds shall not be allocated to districts, but the state funds will be spent in the various parts of the state as the commission thinks best.

The gasoline tax was increased from 5 to 6 cents.

Motor license fees were changed to a weight basis, the rate being 55 cents per hundred.

The 1 cent additional gasoline tax would naturally increase the highway fund by approximately $2,000,000, but, due to general business conditions, it is feared the gross receipts will really be less than heretofore.

NORTH DAKOTA

The legislation of North Dakota changes its present method of operation of a state highway commission. Heretofore the governor was ex-officia chairman with two appointees serving four years each. Under the new law provision is made for a full time member with the title of chief highway commissioner, who is also chairman, and two members on a per diem basis. The length of terms are so arranged that one vacancy will occur every year.

An increase of 1 cent per gallon was made in the gasoline tax, making a total of 4 cents per gallon; 2½ cents is credited to the State Highway Department, 1½ cents for distribution to the various counties, in proportion to the motor vehicle registration. Two-thirds of the county's share to the gasoline tax must be used in construction and maintenance of roads leading to and connecting with the state highway system. The remaining one-third may be used for the county's share in assisting the state in building roads in the county. In North Dakota the counties are required to pay approximately one-fourth of the cost of construction on the state system.

OHIO

The Ohio Legislature changed the law in reference to the method of expenditure of the city's share of the gasoline tax. Under the new law, 50 per cent. of the city's share must be expended for construction and reconstruction, through contractors and competitive bidding. one-sixth of the amount going to cities may be used on the city streets which are connecting links for state highways.

OKLAHOMA

The state Legislature of Oklahoma increased the gasoline tax from 4 to 5 cents to run until December 31, 1931, as an emergency relief measure in securing funds to aid the unemployment situation.

PENNSYLVANIA

While the Pennsylvania Legislature is still in session, there has been passed one piece of legislation that is of considerable importance. This provides for the state to take over 20,000 miles of township highways for construction and maintenance at the expense of the state. This mileage, combined with the existing state mileage, will give the Pennsylvania Department of Highways a total state system of over 33,000 miles. This legislation is presumed to go into effect about August 15.

RHODE ISLAND

Effective July 1, 1931, highway funds in Rhode Island will be budgeted and included in the annual appropriation to be passed by the Legislature.

Motor license fees will be prorated quarterly.

Funds for state roads were decreased slightly by depriving the state Highway Department of court fines for abuse of laws affecting the use of highways. This now goes to the general fund of the state.

The State Highway Department is also given control over all trees within the limits of state highways.

Legal speed for motor trucks with pneumatic tires is raised from twenty-five to thirty-five miles per hour.

SOUTH CAROLINA

In the recent session of the legislature of South Carolina the most outstanding thing was the killing of bills rather than the passing of them. Two bills to stop the issuance of the $65,000,000 bond issue of 1929 were killed. An effort to create a traffic patrol also failed in passing.

SOUTH DAKOTA

The state Legislature of South Dakota made quite considerable change in the distribution of motor license fees. Formerly 50 per cent. went to the state highway system, 48 per cent to the counties and 2 per cent. to the secretary of state for administration purposes. Under the new law but 20 per cent. is left for the state highway system, making 78 per cent. that goes to the counties and the counties are required after completing their improvements to distribute the funds to the townships.

There was a considerable raise in the amount of fees from commercial trucks, but no change in weight or dimensions.

UTAH

The state legislature of Utah has increased the road mileage by 670 miles. Most of this mileage was of local character, although in some instances they were of interstate importance.

The gasoline tax was increased from 3½ to 4 cents, with the provision that the returns from this increased amount must be expended for construction and maintenance of new roads added to the system.

The so-called uniform motor vehicle code, pertaining to traffic regulation, was enacted, effective January 1, 1932. The maximum speed is increased from thirty to forty-five miles per hour for vehicles of any type if equipped with pneumatic tires and not weighing over 10,000 pounds. If above this weight, the limit is placed at thirty miles, except that vehicles designated for carrying passengers may travel at forty-five miles.

VERMONT

Heretofore in Vermont the operating expense item for the motor vehicle department came from the general revenue of the state. Hereafter it will come from the gasoline tax.

The state system (or Federal aid system) was maintained with more or less co-operation with towns, but hereafter the entire maintenance will be directly under the control of the State Highway Department.

WEST VIRGINIA

The West Virginia Legislature authorized the reissuance of $10,000,000 of state road bonds. According to a constitutional amendment adopted in 1920, $50,000,000 in road bonds were provided with the stipulation that when any of the original bonds have been retired a similar issue can be made covering that amount.

The speed limits for motor vehicles carrying passengers was increased to forty-five miles per hour. Vehicles not designated for carrying passengers equipped with pneumatic tires have a limit of thirty-five miles per hour. Solid tire vehicles of less than 4,000 pounds, twenty-five miles per hour. There is also provision made against persons driving at an unnecessarily slow speed.

Width of vehicles are established at eight feet, length of vehicles reduced from forty to thirty-three feet, length of combined vehicles increased from sixty to eighty-five feet, height of vehicles remains at twelve feet.

WISCONSIN

The Wisconsin Legislature passed a law giving the governor power to appoint an emergency commission for unemployment relief, consisting of five persons, who serve for expenses only, and their length of service is limited on order of the governor. The particular purpose of this legislation is to provide relief for unemployment by a program of railroad grade crossing eliminations. Contracts may be let without advertising, and all labor must be bona fide residents of the state. The contracts, however, are made by the State Highway Commission. To provide extra funds for this situation, the gasoline tax was increased from 2 to 4 cents.

Motor license fees for the larger and more expensive automobiles were sharply increased.

The state was made responsible for the maintenance of the state trunk highway system as well as all Federal-aid construction.

Personal property tax on motor vehicles was abolished. In lieu of this, 20 per cent. of the net motor vehicle fees are returned to the local units with the provision that the amount shall not be less than the personal property tax in such units for the year 1931.

WYOMING

In Wyoming a bond issue of $2,800,00 is made available, of which $1,000,000 will be spent this year.

Registration of motor busses and trucks was placed under the jurisdiction of the Public Service Commission. Part of the funds from this source will be credited to the state highway fund.

Gross weight of motor vehicles will be increased to 30,000 pounds.

Maryland A. T. A. Told of Dealers' Legal Pitfalls

(Continued from Page 3)

traded in automobile in the event purchaser refuses to consummate the purchase. In many such instances, where the value of the traded in automobile is large and the cash deposit relatively small, the dealer's protection against a wrongful cancellation is most inadequate.

"The very fact that a dealer may not want to broadcast by suit the fact that his sale has been canceled makes it all the more important that he have in hand adequate security against loss and that his contract permit him to hold such security. In considering the loss in such instances he should bear in mind that, while he may sell to another prospect, he is putting the sold automobile into competition with his other stock which he could sell to such prospects if the purchaser had not defaulted. It sometimes happens that the refusal to accept delivery occurs after the automobile has been actually titled in the name of the purchaser. In such cases it is marked as a second hand automobile, even though it has never left the dealer's floor, and this requires an explanation and sometimes a sacrifice in price. The illustrations given above are only a few of the many instances wherein we believe these forms inadequate.

"We are not unmindful of the fact that some of the order forms in use are furnished to the dealer by the factory and are in use by other dealers throughout the country. In all probability these forms have been prepared by able counsel in the employ of those manufacturers. While we hesitate to criticize their work, we nevertheless believe that some of those forms are inadequate to properly protect the dealers in this state under the uniform sales act as here in force.

"As counsel to the association, we are preparing order forms which will be available to the members who care to use them. We are endeavoring to so prepare these forms as to avoid all the pitfalls that have come to our attention from time to time, and in the execution of this task we will welcome suggestions from the dealers.

II. CAPACITY TO CONTRACT

"Assuming now that a proper order has been duly signed by the customer, a number of things may happen which will give rise to a question of rights and liabilities, but as in all contracts the first question to be determined is the capacity of the parties to make the contracts, because if either of the parties is under any disability (as an infant or a person who is non compos mentis), the rights under the contract are materially altered.

"Non compos mentis means wanting in mental capacity to contract irrespective of the cause of the mental incapacity. A party may be permanently insane or only temporarily insane, or only intoxicated if to a degree rendering him incapable of conducting an ordinary business transaction. Where a party is insane, a contract for things not necessary (and automobiles have generally been held not to be necessaries) can be avoided, in which event restitution must be made by both buyer and seller. It is, however, possible to conceive of a set of circumstances under which an automobile might be held to be a necessary. In such case if the transaction be fair and if no advantage has been taken of the non compos buyer, it cannot be avoided.

III. FRAUD, MISREPRESENTATION AND MISTAKE

"Assuming, however, that the order has been signed by a purchaser who is under no disability, the next question to arise in determining the rights of the parties is whether or not the contract was procured by fraud, misrepresentation or mistake.

"Fraud vitiates whatever it touches, and if there be any fraud in the sale either on the part of buyer or seller, the defrauded party has the right to rescind the contract upon his discovery of the fraud. If the buyer rescinds because of fraud, he may recover his purchase money and his traded in automobile; while if the seller rescinds, he may recover the sold automobile if delivery thereof has been made, but in either case the one rescinding must return all benefit he has received from the contract.

"Misrepresentation is in some respects similar to fraud, but as we are using the terms we mean to make the distinction that while fraud is deliberate and intentional, misrepresentation is innocent and unintentional. Misrepresentation, in order to entitle either party to rescind, must be of a material matter and not merely of detail. We know there are cases where in the sale of used automobiles the year in which the automobile was made has been wrongly stated, and in these cases the courts have allowed as damages only the difference in the value between the automobile as it actually was and the automobile as it was represented. Mere boasting by a salesman as to the qualities or merits of the automobile, or puffing, as it is frequently called in the law reports, does not constitute misrepresentation.

"Mistake, if it be mutual and if it be a matter material to the contract, will give either the buyer or seller the right to rescind the contract promptly upon the discovery of the mistake.

IV. FAILURE TO ACCEPT DELIVERY

"There may be a lapse of time, ranging from days to months, between the signing of the order and the delivery of the automobile, and the question which most frequently arises during this interval grows out of the desire of the purchaser to cancel his order and his refusal to accept delivery when tendered. It is, of course, possible that cases may arise where the dealer wrongfully declines to deliver, but such cases are rare indeed. The right of the purchaser to cancel depends upon the terms of the order, and most forms in use give him the right to cancel if there be a raise in the price. But if the purchaser wrongfully declines to accept delivery the question arises as to what right the dealer has to enforce the contract. We have previously mentioned that the uniform sales act is in force in this state, and it is our opinion that under this act, unless there is something in the order that prevents it, the dealer may, upon the wrongful refusal of the buyer to accept delivery, notify the buyer that the automobile is held for him as bailee, and the dealer may thereupon bring suit for the entire purchase price. We recognize, of course, that dealers do not wish to broadcast the fact that a customer has canceled an order; but we believe that if the buyers who sought to breach their contract were confronted with the fact that they might thereby become liable for the entire purchase price they would be very reluctant to incur such liability.

V. THE CONDITIONAL CONTRACT

"Generally speaking, the conditional contract is executed simultaneously with the delivery of the automobile. Until the contract of sale is signed the order controls the rights of the parties, but after the conditional contract is signed the rights of the parties are controlled by that contract. A number of years ago, as counsel to the association, we developed a conditional sales contract form, which is available to you, and which has proven generally satisfactory. Many dealers used the forms provided by either their manufacturers or finance companies, and it is impossible to discuss the rights and liabilities under each indivdual contract. As a general proposition, however, where the buyer breaches the contract after delivery, the dealer may regain possession of the automobile in one of three ways:

(a) By voluntary surrender.

(b) By taking possession without resort to legal proceedings if he can do so without causing a breach of the peace or public disturbance. This is commonly called "snatching."

(c) By replevin.

"Where replevin is resorted to the dealer must, upon institution of suit, furnish a bond in double the amount of the value of the automobile. The sheriff will then seize the automobile and deliver it to the dealer. The dealer may immediately resell at public or private sale, depending again upon the terms of the contract, but if at private sale the responsibility rests upon him to establish the fact that the sale was fairly and honestly made. In the absence of an express contract right so to do, the dealer may not be the purchaser at his private sale, but if the automobile be sold at public sale, the dealer may purchase and frequently does to protect his claim. In the absence of express contract provisions the dealer need not recondition the automobile before reselling it. Upon such resale, whether public or private, the dealer must account to the defaulted buyer for the entire proceeds of sale less the cost of the bond, the replevin costs, the cost of resale, and the cost of reconditioning where there is a contract right to recondition and where the costs of such reconditioning are reasonable and appropriate. Any excess over and above the amount of the claim on the deferred payments must be paid over to the defaulted buyer. If there be a deficit, the dealer is usually entitled under his contract to recover the deficit from the defaulting buyer. When the replevin case comes to trial, if the dealer does not conclusively establish his right to repossess, he must return the automobile to the buyer with damages; or, if the automobile has been sold, he must make full restitution of its value with damages, but of course he would be entitled to set off the matured deferred payments.

VI. CONFLICTING RIGHTS

"The rights of the dealer who has sold an automobile under a conditional contract of sale may be and frequently are in conflict with the rights of others besides the purchaser. Such conflicts arise between the conditional vendor of the automobile and the conditional vendor of tires, holders of liens for repairs, storage or supplies, attaching creditors and others under varying conditions, and these conflicting claims will now be discussed.

"A dealer has the same right to make a conditional sale of tires as he has to make conditional sales of automobiles, and the conditional vendor of the automobile has no greater right to take the tires which are still subject to a duly recorded conditional sale than has the tire dealer to take the automobile which is still subject to a duly recorded conditional sale. If an automobile dealer repossesses an automobile on which there are tires subject to a duly recorded conditional sale, the tire dealer can compel the automobile dealer to surrender them to him. Where, however, the tires are permanently fastened to the automobile by the tire dealer and have become an integral part of the automobile, as in the case of solid tires, it would seem that the conditional vendor of the tires has then no right to repossess them. While these questions have never been submitted to our Court of Appeals and hence we have no final decision to guide us, our lower court has twice held that the duly recorded conditional sales contract of pneumatic tires is superior to any claim which the conditional vendor of the automobile may have to the tires; and one of the opinions very clearly indicates that where the tires have become an integral part of the automobile, as in the case of solid tires, a different ruling would obtain. A tire dealer has no right to accept in trade tires which are covered by a duly recorded conditional sale of the automobile, and if he does so and then attempts to assert a superior right to tires which he has sold under a conditional sale, his claim may be met with a counter-claim for the tires he so took in trade.

"From time immemorial the mechanic has had a lien for repairs, and prior to the Act of 1924 our Court of Appeals, in the Neely and Ensor case, decided that this lien was superior to the conditional contract of sale. By this act the common law mechanic's lien has now been merged with another statutory lien for storage and supplies, and this merged lien is now subordinate to the conditional sales contract. The old remedy for enforcing the common law mechanic's lien was tedious and costly, and in consolidating it with the statutory lien for storage and supplies and subordinating them to the conditional contract of sale, the legislature has substituted a simple, quick, inexpensive and adequate method of enforcement. As against innocent third parties for value, the lien remains in force only so long as the mechanic, supply dealer or garage keeper retains possession of the automobile.

But even if possession of the automobile be surrendered, the lien continues as between the parties. To enforce the lien the automobile must be in the possession of the lienor, and if he has parted with possession he must regain it either by voluntary surrender, "snatching," or replevin. Of course, if the automobile has been repossessed by the conditional vendor, the lienor has no right to recover it from him. When the lienor is in possession of the automobile, if his bill for repairs, supplies or storage be thirty days in arrears, he can sell the automobile at public sale at any convenient and accessible place between the hours of 10 in the morning and 6 in the evening, provided he gives notice of such sale. The notice must describe the automobile for identification purposes and state the time, place and terms of sale. It must be inserted in at least one newspaper published in the city or county where the sale is to take place at least once a week for two successive weeks prior to the day of sale. At least ten days prior to the day of the sale the lienor must send a similar notice to the owner by registered mail, if his address be known or can be ascertained by the exercise of reasonable diligence, or to the person who ordered the repairs, supplies or storage. If such address be unknown or cannot be so ascertained, then the notice should be sent to general delivery in the post office of the city or county where the business of the lienor is located. If the automobile be subject to a conditional contract of sale, that fact must definitely appear in the advertisement of sale, and the sale be made subject to such contract. After deducting expenses, if there be any excess, the excess must be turned over to the owner. If the owner authorized the repairs, storage or supplies, then the lienor can recover any deficit from the owner by suit.

VII. RECORDING

"Between the immediate vendor and purchaser, the conditional sales contract is binding even though it be not recorded, but our statute provides that it shall not be valid as to third persons until it is duly recorded. The purpose of recording is to apprise third parties of the real facts with reference to the sale and to prevent various types of fraud being practiced upon innocent purchasers for value and upon creditors. Whether or not recording accomplishes this purpose is a much discussed question, but in Maryland recording is advisable in order to fully protect the conditional vendor's rights. Conditional sales contracts in this state must be recorded in the place where the purchaser lives. If the purchaser be a corporation or a partnership, then it must be recorded in the place where the purchaser's principal place of business is located in this state. There is no time within which it must be recorded, but if not immediately recorded, the rights of others may intervene and become paramount to the rights of the dealer. If the purchaser changes his place of residence, when that fact becomes known to the dealer the safer course is for the dealer to re-record in the place to which the purchaser has moved.

VIII. INSTALLMENT NOTES

"Lastly, let me say that while installment notes with pertinent clauses maturing the note in the event of a default may be made negotiable, it is possible to destroy their marketability by making them undesirable. You all know that indorsed paper must be presented to the maker and notice of default given to the indorser in order that the indorser may be held liable. It frequently happens that installment notes are not presented for payment, and that the indorser is not duly notified when the first default occurs. It is therefore highly desirable that these notes contain a waiver of presentation, of protest and of notice of dishonor. I would suggest that the form of your notes be scrutinized in each instance by your personal counsel."

JUNE CAR SALES IN INDIANAPOLIS TOP LAST YEAR

(Continued from Page 1)

hind the totals of 1930, but the Pontiac companion line went steadily forward month after month, and finished the second quarter in strong position. Deliveries during the last six months, it is indicated by dealer predictions, will run the year's total well above that of 1930 whose volume will probably be exceeded during the first seven months of 1931.

Oldsmobile is another that appeared in position to pass last year's total before the arrival of the fall season, which is expected to develop renewed impetus in sales. A gain of more than 20 per cent. was registered during the first half over that period of last year.

Chrysler's various lines were in good position as the second half began, the De Soto leading in the percentage column with a gain of about 40 per cent. for the comparative period. It is anticipated here that the De Soto line, one of the fastest selling in its price class here, will exceed the 600 mark this year and more than likely establish an all-time record. In 1929 De Soto registered 613 cars here, and with the 500 mark already passed, De Soto dealers believe a new record will be an easy target.

Dodge was rapidly closing up the gap between this and last year's totals, and the local distributor was confident of finishing the year with a good gain over 1930.

Chrysler needed only another month or so to pass the total for 1930 and the new Plymouth was expected to shoot quickly past last year's figure. Remarkable acceptance of the new four was reported from all quarters and Chrysler, De Soto and Dodge dealers were anticipating a great deal of additional business from this source.

The Chrysler group for the six months was 20 per cent. ahead of the first half of 1930 and General Motors total was up more than 33 per cent.

The Chrysler division's total accounted for about 15 per cent. of the total of the entire list for the six months, compared with 10 per cent. in 1930, and the General Motors percentage this year was about 40, against 25 per cent. last year.

Auburn, Hupp, Studebaker and the Willys-Overland group were others with improved records this year.

GRAHAM ANNOUNCES PERSONNEL CHANGES AND APPOINTMENTS

(Continued from Page 1)

partment of the Paige-Detroit company in 1911.

Announcement also has been made by C. W. Matheson, general sales manager of the Graham-Paige Motors Corporation, that R. Ward Macey has been appointed Atlanta district manager for both Graham motor cars and Paige commercial cars.

Macey has had more than two decades of experience in the automotive industry. Previous to joining the Graham factory organization, he was Atlanta district manager for Dodge Brothers.

NO. CAROLINA TO BUY 1,500 CAR BATTERIES

Raleigh, N. C., July 16.—Bids will be opened July 23 by the State Division of Purchase and Contract on 1,500 heavy duty automobile storage batteries, according to an announcement by Director A. S. Brower.

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